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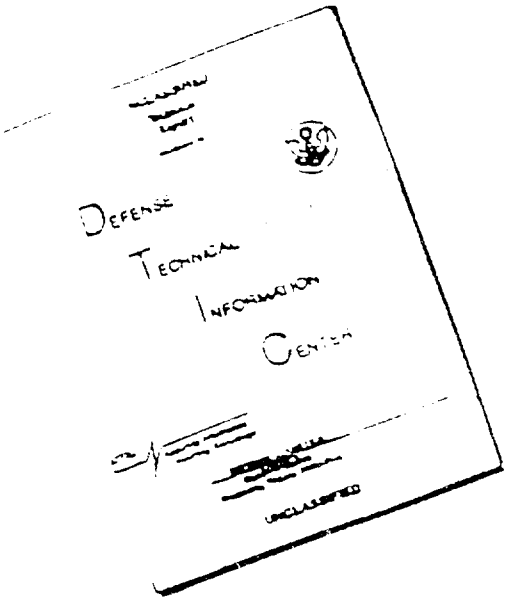

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ANTHRAX

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ANTHRAX

(A Collection of Organizational and Methodological Materials)

Under the general editorship of B. N. Pastukhov

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Foreword

By the brilliant program of the Seven-Year Plan of growth of the national economy of the USSR and by decree of the Central Committee of the Communist Party of the Soviet Union and the Council of Ministers of the USSR "On Measures for the Further Improvement in Medical Service and Protection of the Health of the Populace of the USSR," Soviet health is confronted with diversified tasks among which an important place is occupied by the proper organization of sanitation and antiepidemic measures directed at a final elimination or a marked reduction in diseases of people due to infectious diseases in our country.

The task of an even or abrupt and marked reduction in the incidence of anthrax in our country within the next few years is a very urgent and realizable one.

For its realization, it is necessary to unite and to achieve complete cooperation between the health organs and the organs of other institutions, especially the Ministry of Agriculture, to ensure the well advised and qualified leadership on the part of medical and agricultural workers.

In our country, instructions and rules have been worked out and published by the ministries of health, agriculture, and other departments, which regulate the basic issues of epidemiology, diagnosis, treatment, and especially prevention of anthrax in people and animals. At the same time, up until the present time these guiding official materials have not been collected, which to a considerable extent has interfered in the use of them by practical workers.

In view of the highly positive experience of publishing collections of organizational and methodological materials in the area of infectious diseases, especially the zoonoses (brucellosis, tularemia, etc.), we feel it advisable to compile this collection of such materials on anthrax.

In bringing this collection to the attention of the reader, we have compiled a number of the most important medical organizational and methodological materials currently in effect, and also the most important veterinary and sanitation instructions and decrees which are of interest for medical workers.

This collection is designed for physicians of the sanitation and epidemiologic as well as therapeutic and prophylactic institutions: epidemiologists, microbiologists, infectious disease specialists, sanitation physicians, and middle medical workers of the corresponding institutions.

The compilers of this collection will welcome critical remarks and the desires of readers for improvements in the content of a subsequent edition of this collection.

E. N. Shlyakov,
V. A. Sinodskaya

MEDICAL INSTRUCTIONS

DIRECTIONS FOR CLINICAL AND LABORATORY DIAGNOSIS, TREATMENT, AND PROPHYLAXIS OF ANTHRAX IN HUMAN BEINGS

(Note. Prepared by the Moldavian Institute of Epidemiology, Microbiology and Hygiene, by the Central Institute of Research on Disinfections, by the Saratovsky Institute - "Microbe", and by the Central Anti-pestilence Observation Station).

Ruling by the Ministry of Public Health USSR, June 23 1959, in an amendment replacing directions of January 4 1957.

(Extract)

Anthrax, a typical member of the group known as zoonoses, is an infectious disease in human beings and in domestic and wild animals.

I. General information on causative organisms of anthrax

A. Morphology

What causes anthrax is a large bacillus - Bac. anthracis - from 5 to 8, sometimes 10 μ, in length and from 1 to 1½ μ in thickness. Living bacilli have slightly rounded ends; on stained preparations they appear rounded on all sides and on occasions somewhat bent inwards. The bacillus in question is

an aerobe or facultative aerobe, sedentary, and slightly colored by the whole range of aniline dyes, grampositive.

On smears of the bacillus, they are arranged as a rule in pairs or in chains.

Culture of the bacillus is especially favorable under specific conditions in capsules and spores. Both its vegetative type and spore type can be discerned - each type having distinct biological characteristics.

B. Culture characteristics

Optimum temperature for the growth of anthrax culture should be from 37 to 38. Optimum pH is about 7.2 to 7.6, though the outside limits for growth have been observed at between pH 7 up to 8.

The anthrax bacillus in normal nutritive media (such as peptonic meat broth, agar, and jelly) grows typically, which thus serves as a guide to distinguish its characteristics in laboratory diagnostics.

On agar plates, fairly large, uneven, and dull cultivations develop, with fringes round the edges in the form of streaky threads that have gotten out of the main central core of the colony. When slightly magnified, these fringes or edges look like locks of hair of a "lion's mane". This is the usual type R and is extremely virulent.

Through spreading out old laboratory cultures on to an agar plate, colonies of the S type, with smooth and even edges, can sometimes be grown. Such colonies usually consist of bacteria which are either non-virulent or only slightly so.

In broth media the anthrax bacillus in its R type grows on the bottom forming what looks like a cotton deposit or lump of wadding. Here, the broth is transparent; but when the broth is shaken about, the cotton-like deposit quickly disperses through the broth, making it blurred. The broth is likewise blurred uniformally throughout when the culture is developed in its S form.

In columns of 10 to 12% peptonic meat gelatine, when the germ has been injected and temperature raised to 22, the culture within 2 to 5 days looks like a fir-tree turned upside-down; the gelatine, starting with its surface, quickly thins out like an infundibulum (ie. "peptonization"), and at the bottom the whitish flakes get all piled up.

On potatoes anthrax bacilli don't grow so well as on agar. Within 2 days shining white or dark yellow growths are formed.

In milk, the bacillus grows well. Within 2 to 4 days the milk turns, and when the growth has reached its highest extent the milk peptonizes slowly and coagulates (maximum on the 8th day) without acidity forming.

In blood medias of hemolysis, the germ is not observed to grow, or if it does, growth takes place only very seldom and

and slowly(in broth)in which it differs from anthracoids which can bring on hemolysis quickly (from 16 to 17 hours at a temperature of 37°).

Capsule formations can sometimes be observed when the bacilli are cultivated in blood or serum media. But as a rule, capsule formations of these bacilli occur in the organisms of animals or man. The stimulant loses its capacity for capsulization when cultivated in normal nutritive medias.

Capsularized types of the bacilli are very virulent, due to the substance in the capsule. Non-capsulized types as a rule lose their virulence.

Spores of the bacillus are formed outside an animal or human organism only when much oxygen is accessible and when the humidity is definitely assured at media temperatures of up to 42.5°.

The optimum for spore formation is from 30° to 35°. Spore formation tapers off at temperatures lower than 12° or higher than 43°.

In blood and in the organs of an animal or man stricken with anthrax, and also in unopened or non-dissected dead bodies, the lack of oxygen does not preclude the formation of spore. Spores are formed from the cultivation of the bacillus in artificial nutritive medae. The best of such nutritive media for this purpose is wheat or a weak alkaline agar media, prepared in alkaline meat broth without adding peptone.

The spores are positioned centrally. Their diameter does not exceed that of a microbe cell. Only one spore is formed in each Siberian anthrax bacillus. The spores are egg-shaped.

Stability

The vegetative types producing anthrax are moderately resistant to physico-chemical agents.

Upon heating to 50° in the course of 30 minutes they perish; at temperatures higher than 75°, destruction takes place in 1 minute.

Through the action of corrosive sublimates in solutions of formaldehyde and of chlorine in normal concentrations applied to the centres of intestinal infection destruction takes place in a few minutes.

In an organism where there are no conditions for spore formation, the vegetative types of anthrax bacilli, in the course of two days under the influence of putrid microorganisms, then perish.

Unlike other vegetative types, anthrax spores are exceedingly resistant.

In water, spores retain capacity for life for several years, and in the soil for decades. Direct sunlight kills the spores in 5 to 20 days or more.

At 70° spores keep their capacity for life many hours, and

are destroyed at boiling point in 45 to 60 minutes, and in an autoclave at a temperature of 110° in 5 minutes. Dry heat at 140° kills them in 3 hours.

Spores can stay alive in the skin of tanned dissected animals The salting of meat like salt beef or ham does not destroy anthrax spores.

II Epizootology of anthrax

Sick domestic animals, especially herbivorous ones, provide the principal reservoir and source for the disease. Sometimes wild animals get sick from it.

Infected soil, especially rich with marsh-ridden organic substances provides an additional source for the disease.

Animals sick with the disease furnish a source for the infection during the whole period of their illness, imparting stimulants of the disease through their urine faeces and saliva into their external surroundings. When they die, their organs, hide, coat, blood, and secretions are contagious.

Animals are highly susceptible to anthrax. Sheep, cows, buffalos, camels, goats, horses, donkeys and deer are the most susceptible. Pigs are less susceptible to the disease. Dogs and cats show the greatest resistance to the infection. Among laboratory animals, white mice, rabbits, guinea pigs and monkeys are especially sensitive; the infection successfully prevails

in these cases by various means - subcutaneously, intracutaneously, intravenously and intraperitoneally, as well as through the mouth etc. White mice and guinea pigs die within 1 to 2 days, rabbits within 1½ to 3 days. The process of the infection among susceptible animals is of a septic nature with metastasis developing in the internal organs.

Among more restistant kind of animals (like pigs) the process takes on a localized form - inflammation (either of a serous hemorrhagic or else of a necrotic kind) of the lymphatic ganglions in pharynx and gullet.

Young pigeons and small birds in experiments are but slightly affected by the disease. It is much more difficult to infect large birds.

The infection is transmitted to animals through various ways - such as through the alimentary tract, transmissive tracts and respiratory passages.

The alimentary tract as a way of transmitting the disease is the most widespread among animals. The infection originates chiefly from food and drinking water when they are contaminated by anthrax spore.

Animals of prey and dogs can get infected when eating the carcasses of animals stricken with the disease.

The transmissive path as a means of spreading the infection is less common. Animals can catch the disease from stinging

flies, ticks and gad-flies, acting as carriers from sick animals, from carcasses and from other external infectious objects.

In the mouth mechanism of the gad-fly, the anthrax bacillus is preserved up to 5 days, in the goitre and stomach up to 2 days.

The air passage is the least prevalent means of transmitting the infection. Animals generally do not catch the infection through the respiratory passages.

Anthrax is not generally transmitted by direct contact from a sick animal to a healthy one.

Instances of anthrax occur in clearly seasonal patterns chiefly from June through August, and can be attributed to the frequent contact of animals with the soil and with bloodsucking insects during these summer months. 60 to 80% of annual cases of anthrax occur during this period.

III. Epidemiology of anthrax

There are various paths whereby the infection can be transmitted to man. The disease spreads chiefly from an animal carcass, such as, when it is being stripped of its hide, or after compulsory slaughter has been administered, including any other infected parts of the animal; also when a sick animal is being attended to, and when there are various objects like feed products, prepared from materials of the animal which have been neglected and exposed.

Frequent cases occur through man's contact with the soil, and from objects tainted with contagious soil. A sick human being theoretically can harbour the disease, but in practise he rarely imparts it.

Anthrax among human beings occurs only sporadically and is not an epidemic. The seasonability of the disease among human beings to a large extent is the same as that noted under epizootology. The commonest causes of anthrax among human beings are as follows;

In rural natural environments.

a) Breaking personal hygiene regulations during treatment of sick animals.

b) Secretly slaughtering sick animals, stripping down and parcelling out their hides and using them for various purposes without observing health regulations.

c) Employing meat foods or meat products like sausages or forcemeat derived from sick animals.

d) Purchasing in the market by hand coats, hides, skins, hair, bristles and other animal produce which hasn't been tested for anthrax.

In industrial environments.

a) Breaking personal hygiene regulations during treatment of sick animals or handling infected by-products of animals.

b) Neglecting safety regulations instituted in centres for the storage, processing, preservation and transportation of animal products.

c) Neglecting codes and rules in laboratories, institutes of research and technology, in factories for biological preparations, and other centers where work involving anthrax causative organisms is being carried out.

In a man, symptons of anthrax infection appear on the skin, intestines, and lungs.

The cutaneous type occurs more often than the intestine or pulmonary types, (more than 98% of the cases.)

Infection occurs when the anthrax causative organism strikes a slightly injured exposed part of the body - such as from a scratch, graze, or slight cut: also through the cutting up of a carcass of a fatally sick animal, through treatment of a sick animal, through contact with different forms of animal products derived from sick animals.

The intestinal type can arise in food, when meat or meat products have not been subjected to a sufficient period of treatment and processing (such as smoke-dried, boiled, and dressed sausage meats etc.)

The pulmonary type of anthrax affects human beings only very rarely and is generally the result of breathing in dust containing the spores. A similar disease affecting man was more discernible formerly, when coats taken from animals ridden with

anthrax were processed, or when infected rags were sorted and processed. This latter sickness was known as "ragman's fever".

IV. Clinical aspects of anthrax.

The incubation period in man stricken with anthrax lasts from several hours to 6 or 8 days, 2 to 3 days being the commonest period.

Cutaneous type

This type affects man in the form of a local infection - namely anthracii carbuncle. This gets localized usually on the exposed parts of the body (face, neck, arms, and less often, the legs): least of all on clothed parts of the body.

Where the causative organism has struck, there appears at first a reddish spot, changing into a papula of reddish copper color. Within a few hours, the papula becomes a viscular blister about 2 or 3 mms.in diameter, then turns into a pustule where a scab forms,quickly turning black. Then a small ring appears round the scab, consisting of tiny, newly-formed blisters that within 1 or 2 days merge together from the center part of the necrosis into a large, black, flat scab about 5 or 6 cms. in diameter. The surrounding skin and cellular tissue to a large extent become swollen and runny. One common trait of the disease is the absence of any pain from the scab, or from the fluid swellings in the skin surrounding the scab. The patient's temperature as a rule is about 39 to

40, but in mild cases can be below fever point.

In cases with a satisfactory result, the temperature abates within 5 to 6 days, the runny swellings gradually recede, and within 2 or 2½ weeks since the sickness came on, the scab falls away, and the ulcer granulates, leaving a scar. In severe cases sepsis can develop, with metastasis of the reproductive agencies setting in, usually causing death.

The disease once experienced carries immunity thereafter, though it is possible to get it a second time.

The Intestinal type

This is rare among humans and its symptoms are a severe general intoxication in the catarrhal and hemorrhagic parts of the digestive system. Sickness often sets in accompanied by dysphoria, nausea, vomiting with blood, nose-bleed, and a high temperature; sometimes sharp griping pains in the stomach and constant pains in the waist and loins can be discerned. The patient's stomach swells, and there is a lack of tension in the abdominal wall. Cardiovascular activity is sharply disturbed. The sickness lasts on average 2 to 4 days, most often fatal when the heart gets severely progressively weaker.

Pulmonary Type

This type is very rare. The disease sets on very fast and conforms to the influenzal bronchio-pneumonia type of illness with marked general intoxication; it is often combined with

exudative pleurisy. The oncoming is characterized by catarrh in the respiratory tracts, pains and compression in the chest, general dysphoria with a high fever. Coughing at first occurs with mucous and sputum, later with blood in the sputum. The mucous not infrequently coagulates resembling raspberry jelly. Death comes on on the 2nd or 3rd day following a heart attack.

Septic type

The primary type of septic anthrax whose causative organisms gets absorbed into the system through the mucous layers, develops in circumstances of extreme violence, when the protective strength of the microorganism is deficient. Primary local infections are lacking with this type.

The s eptic type of anthrax develops as an after-effect of another type of anthrax.

The process is characterized by a rapid and extremely heavy blood flow with ample hemorrhagic symptoms, and with ample concentrations of the anthrax bacillus in the blood, spinal fluid and in wide variety of organs.

In all these types of disease the white blood picture can show a mild concentration to the left with a slight leucocytosis.

V. Diagnostics of anthrax

Diagnosis of anthrax in man is based on epidemiological,

clinical and laboratorial data.

Differentiations in clinical diagnosis of anthrax

The cutaneous categories of anthrax can be distinguished from furuncle, carbuncles, nervous inflammation of the skin, insect bites, glanders, carbuncuious glandular rabbit-fever, and a skin variety of fever in the following ways -

a) With simplest variety of furuncles and carbuncles, the contaminated part is shown to be highly infectious, the skin goes red, with the tissue around the furuncle extremely inflamed; the scab typical of anthrax is absent, and oedema is revealed only faintly.

b) With nervous inflammation of the skin, the symptoms are an infected cylinder-shaped object on the peripheral region of the infection, redness, local sensitivity and infection in the inflamed parts of the skin and a sharp dividing-line between the contaminated part and the healthy skin.

c) With insect bites, the chief symptom is rapid oedema. Data on anamnesis play a large part in the process of differentiation.

d) With glanders, the clinical picture reveals a great variety of glanderous nodes as well as acute infection of the affected parts.

e) With rabbit-fever, the carbuncle differs from the

typical carbuncle of the Siberian anthrax variety by its sensitivity; there is not any black scab, nor does oedema appear in related tissue.

f) With the cutaneous type of fever, there is acute infection of the affected parts of the skin, and absence of oedema, no dark coloring of the scab or lymphangitus.

The pulmonary category of anthrax can be differentiated from inflammation of the lungs by means of the following etiological observations.

a) With lung inflammation in its pulmonary form of fever, there is a typical absence of catarrhal symptoms in the upper respiratory tracts (there is no head cold, hoarseness, tears etc.)

b) With pneumonia or bronchio-pneumonia through etiology not indicating anthrax, no abundance of serous hemorrhagic mucous can be observed, nor do clinical symptoms rapidly arise, nor is the general condition of the patient so serious as is the case with anthrax.

The intestinal category of anthrax can be differentiated from the effects left by various chemical and nutritive prducts, and from the symptoms of dysentery.

a) With the after-effects from the products mentioned above, by employing any etiological method, the clinical symptoms and general development of the effects including the

course of sickness are fairly distinguishable.

b) With dysentery, spasmodic pains and shortening of the large intestine are observed; development and course of the sickness follow a characteristic pattern.

The septic category of anthrax can be differentiated from septicaemia by the normal process of etiology. With septic anthrax, epidemiological data and secondary symptoms on the skin contribute to the diagnosis. Blood analysis can be decisive.

Laboratorial diagnostic of anthrax

This plays a large role in differentiating the various types of anthrax from other types of diseases which appear similar in clinical analysis. Subject to laboratory investigation are the following:-

a) With the skin type, -the contents of a blister or pustule and the separate components of the carbuncle or boil; with the lung type - the patient's mucous; with the intestinal type - the faeces or urine of the patient; with the septic type-the patient's blood.

b) Various external objects like earth and water, food products, animal by-products etc.

Procedure for gathering matter for investigation

Matter for laboratorial investigation should be gathered by a sterilized instrument in a sterilized vessel. The

skin around the affected part and the surface of the carbuncle are carefully swabbed with alcohol, at the patient's bedside.

The contents of a vesicule or pustule, the components of a boil or carbuncle are taken in a pipette or syringe; if these are lacking, then in a sterilized wad. If the carbuncle is running, it must be wiped clean of pus as a precaution. Some of the watery tissue to be examined must be taken from the edge of the wound together with healthy tissue, which under no circumstances should be harmed.

Mucous should be gathered in a sterilized jar. In addition, two smears should be made on a glass slide.

The patient's faeces should be gathered in a sterilized jar or cartridge.

Animal by-products like coat, hair, and bristles should be sent for investigation in sufficient amounts - no less than 20 to 30 grams.

Soil should not be despatched in amounts of less than 200 grams. for which samples should be taken from different places of the soil to be examined, and each lot sent separately.

At least 1 to 2 litres of urine should be submitted for investigation. Thick blood smears of dead animals to be examined should be sent on glass slides dried out in the air.

Blood should be taken by means of an incision in the animal's ear after precautionary swabbing of the skin around the place where the incision is made. The place where the

blood was taken should be seared with a white-hot iron which should quickly stop bleeding.

Note It's not permitted to dissect the carcass of animals stricken with anthrax.

The matter to be examined should be sown into a nutritive media directly by the patients bedside by means of a stitching. A small part of an ordinary kind of thread which must be sterilized and boiled is saturated with the contents of a pustule and components of a carbuncle. The thread is then placed in a test tube and sent up to be examined. This method with the thread can be adopted when dead bodies are being investigated.

Method of sending matter, for laboratorial investigation

Matter must be placed in a sterilized test tube, jar or other vessel. The dried-out smears are placed in a Peter's cup or wrapped round with thick paper and heading "Smear not determined" must be written thereon.

On the accompanying label the patient's surname, first name and patronymic must be indicated, together with the place and date where the matter was gathered, its title, and presumed diagnosis.

Then the material is placed in a wooden or iron box or drawer fastened with lead or sealing wax. On the upper part of of the box a notice should read "This way up, with care", and

in this way it is sent to the laboratory by special delivery. Accompanying documents should be fastened to the box, enumerating the objects to be examined, together with any data which has been noted on the label of each jar, test tube etc.

Note. Fresh matter must be sent to the laboratory, since matter which has begun to decay makes it more difficult to isolate a pure culture of anthrax.

VI Basic plan for labatorial investigation.

a) Microscopy of stained matter

b) Seeding on to nutritive media

c) Investigation of diseases in laboratory animals (biological tests and sampling).

Bacterioscopy

This comes first in the examination of the furnished material. Some smears are prepared from the material under examination. Apart from Gram's stain and aniline dyes, the smears are stained with Rebiger solution (for the detection of capsular types) using the Pashkov method (for detection of spores).

With a microscope, the smears reveal the typical large bacilli, surrounded by capsular forms and positioned in small chains. In a suspended drop, the sedentary character of anthrax bacilliis can be determined and maintained.

For detection of capsules, Rebiger solution is used with 15 to 20 grams. of gentian violet and dissolved in 100ml.40° of formalin. The solution is sustained at room temperature for several hours, then filtered . At the same time the solution settles and then is dyed. Smears that have not settled are held in the dye for 15 to 20 seconds, then washed with water and dried.

Capsular forms are dyed in a reddish violet color, bacteria in a darker violet color.

For the detection of spores, the smear is settled on the flame of a burner, then it is dyed blue for 15 to 20 seconds. The smear is then washed with water and is dyed with 0.5 of neutral water solution for 30 seconds, then the dye is washed with water and the smear is dried.

Spores are dyed in light blue or blue color, the protoplasm of vegetative types in a rose color.

In some smears, the spores can be detected as oval or round, sharply refracting the light.

Seeding to nutritive media

Seeding of matter is effected on to the customary peptonic meat agar media in a Peter's cup. (pH = 7.2 to 7.6). Within 24 hrs the growths in a thermostat (at a temperature of 37°) assume the form of dull uneven colonies, with hairy edges resembling a "lion's mane" when slightly magnified. The

isolated cultures are examined for traits most typical of anthrax bacilli: bacterioscopy is used for morphology, and drops in suspension for testing degree of mobility. For the purpose of a detailed examination the following culture seedings are made:-

1. To 10% peptonic meat jelly media for examining proteolytic capacity.
2. To broth, for distinguishing anthrax from common-place bacillus-like microbes. (like anthracoids, or a pseudo-anthrax bacilli) which multiply very fast within 15-20 hours, blurring the broth (see the summary table of symptoms in the supplement)
3. To milk for examining degree of peptonization.

Note Careful examination of bacillary differences in broth is recommended in cases where dead animal matter is being investigated.

The isolation of pure anthrax culture is necessary to distinguish them from saprophytic bacilli which are very like anthrax morphologically, and also for determining their pathogenes.

Infection of laboratory animals (samplings)

Membership of culture to the anthrax bacilli group is ascertained by means of injecting laboratory animals, especially white mice, though guinea-pigs and rabbits can also be used.

Laboratory animals are infected under the skin in the rear

part of the back (from 0.1 to 2 mls. in each case). They die from anthrax within 1 or 2 days following general symptoms of sepsis.

Rabbits and guinea-pigs are injected subcutaneously in the region of the stomach(from 0.2 to0.5 mls. in each case). They die within 2 or 3 days following general symptoms of sepsis.

Experiments on the animals are observed up to 10 days. The dead animals are dissected, smears are made and seedings made from the blood, heart, spleen and from infiltrations made at the place of injection of the infected material.

From smears prepared from blood, the heart and spleen, the presence of anthrax in the typical form of tiny chains surrounded by the bacilli of the capsule type can be determined through bacterioscopy. Seedings from blood and spleen on to the agar dish yield colonies of the R type; and into broth, growth is revealed with the forming of flakes at the bottom of the test tube with the broth getting clearer. A typical pathologo-anatomical picture is revealed from the dissection of laboratory animals fatally stricken with anthrax. Upon examining coat, hair, bristles and also the soil for presence of anthrax, the matter is heated up to sterilize any non-sporous microbes (bearing in mind that anthrax microbes are found in matter in a sporous form). Bristles, hair and coat are cut up in little pieces, washed in broth and heated for 30 minutes at

a temperature of 70 to 80°, after which the broth is transmitted on to agar in a cup. At the same time the rest of the broth is placed in a thermostat for 24 hrs. and then its transmissima is likewise made on to agar in cups.

Conclusion from analysis can be given by the laboratory on the day following receipt of the objects to be examined. Because biological tests in animals have to be set up, the laboratory can delay delivery of results for 3 or 4 days.

Serological diagnosis - reaction of precipitates according to the Askoli method

Thermo-precipitated reaction by the Askoli method reveals specific antigens even in those cases when bacteriological examinations are negative. This takes place when non-fresh matter is available and when raw non-dissected hides and organs of ddad animals are being examined. For current diagnosis this reaction doesn't have any advantages over the seeding or "sowing on" method, or over the method of infecting animals for sampling purposes. For carrying out the precipated reaction, precipitating anthrax serum, antigen of the matter for examination, as well as bacterial anthrax antigen for verification are all necessary.

To obtain the antigen, matter taken from the dead animals, such as pieces of skin(if the animals haven't been dissected),

muscles, bits of dissected coat etc. is cut up in little pieces, and poured over with a salt solution (10 ml. of solution per 1 gram of the matter) and then extracted with boiling for 5 to 10 minutes. The extract is then filtered till quite clear through an annealed asbestos wad or talcous filter, or through paper as a precaution, moistening them with salt solution.

With regard to the serum, from 0.2 to 0.3 mls. of clear anthrax serum is poured into narrow test tubes and with a pasteurized pipette some quantity of the extract - the antigen - is carefully deposited thereon.

With a positive reaction, not more than 15 minutes later a blurred white circle should appear on the rim of the adjacent fluid. The reaction is evaluated by the symbol++. In cases of doubtful reaction, the circle appears later than 15 mins. This reaction is denoted by the symbol +. Negative reactions don't have a circle. This is denoted by the symbol —

At the same time 4 verification tests must be made:-

1) With the precipitating serum and an extract from the anthrax material.

2) With the precipitating serum an extract from the same organ of the known living animal.

3) With the precipitating serum and salt solution(or

distilled water)

4) With normal serum and the extract under examination

VII Treatment of patients stricken with anthrax

Serum in the form of medicine anti-anthrax solution provided the basic specific treatment for all types of anthrax. The course of treatment and dosage varies very much with each case. The solution is first heated up to 37° and then administered intramuscularly subcutaneously, or intravenously. With the skin type, the anti-anthrax solution is given intramuscularly or subcutaneously in doses of 20 to 50 to 100 mls. 1 or 2 times in 24 hrs. With desensibilitization according to Alexander Besredka's method, this treatment lasts until there is a thorough improvement, disappearance of oedema, decline of temperature, and until the patient feels generally better. The solution in a variety of cases is applied in conjunction with novarsenol and penicillin. Novarsenol is given intraveneously daily, based on a calculation of 0.01 grms. for every kilogram of the patient's weight. Penicillin is given intramuscularly 2 to 3 times every 24 hrs. (the 24 hourly dose is from 1,500,000 units).

At the sight of the infection - boil, carbuncle, or pustule, a bandage (10% xeroformic, 0.5% carbolic, boracic bismuth

subgallatal, dermotol or zinc) is smeared herewith and applied. It's very dangerous to cauterize or cut the carbuncle since this can cause the anthrax bacilli to get into the blood.

In its intestinal, lung, or septic form, or in severe cases of the skin type of anthrax disease, anti-anthrax solutions besides penicillin and novarsenol, can be administered intravenously in doses of 100 to 150 to 200 ml. Administration of the solutions in 50 ml. doses are repeated daily for 3 days.

Specific treatment of anthrax is combined with medicinal remedies according the symptoms, especially cardial ones, like camphor, caffeine, strychnine, ephedrine, adrenalin, and glucose. Vitamins when indicated are given in customary dosages. Note When the anti-anthrax serum solution is lacking, then a similar solution can be used, which is the one used in the treatment of animals. Dosage doesn't change, but the ampules or little bottles containing this latter solution must on no account be shaken up.

VIII. Preventive measures to be used in contending with Anthrax

In carrying out anti-anthrax measures, it must be borne in mind that sick animals are the main source for the infection.

Consequently, the main aim should be the elimination of the

hot beds or breeding grounds for the disease including the various routes by which the disease is transmitted. The spreading of the disease to surrounding areas must be prevented, and people and animals thus protected from catching it.

A. Prophylaxis for humans

The following preventive health measures are necessary:- attention to personal hygiene regulations in centers where are prepared, preserved, processed animal products for distribution and sale; also farms, especially where there is susceptibility to anthrax, or farms lacking hospital facilities; the administration of prophylactic inoculations; the organization of facts concerning the various breeding grounds stimulating the infection, and facts concerning liquidation of these breeding grounds; the carrying out of constructive health programs among the population, and their education in the rules of hygiene; finally the organization of a health corps.

These preventive measures against anthrax should be implemented according to concrete plans in the republic, region, or district.

Planning should be made in conjunction with interested departments and institutes, and should be consolidated with the help of the ministers of the unions and autonomous repub-

lics and executive committees of the Soviets of workers deputies.

A. Prophylactic inoculation of humans against antrax

Inoculation against antnrax is carried out by means of a live sporous non-capsular type of vaccine STI, prepared from a non-virulent stem of the anthrax microbe.

The vaccine in question is noted for its extreme effectiveness and harmlessness.

Inoculation is indicated for the following persons who are most prone by their conditions to catch the infection:

to veterinary workers and those engaged in the various zoo sciences;

to workers engaged in various centers for the preparation, sorting, preserving, transportation, and processing of animal products like hides, skin,coat, hair, bristles, bones, bone meal, etc.;

to workers engaged at meat centers and slaughter houses;

to workers engaged in the handling of farm animals in places lacking adequate hospital or medical facilities;

to people working with live anthrax cultures or with laboratory animals infected with anthrax, or else engaged

in the investigation of matter infected by anthrax;

to people subject to the threat of getting infected - ie, those who work close to the epidemic or its environment.

The vaccine should be witheld in certain extreme cases - in decompensatory heart diseases, in conditions of cachexia, in severely chronic diseases of the inner organs (the kidneys, liver, etc.), and of the central nervous system, in active types of T.B., in severe cases of infantilism, of enlargement and disease of the lymphatic ganglions, in severe cases of endocrine illnesses, during the second half of pregnancy, and also when pregnancy of any phase assumes toxicosis.

Patients with chronic malaria before and on the day of anti-anthrax vaccination should be given acrichine (quinacrine).

Conditions of administering the vaccine:

The physician gives the vaccine. Vaccination and revaccination are given at the same time - cutaneously across the scarred skin, or else subcutaneously. Much care should be taken when handling the ampule prior to vaccination. If cracks appear in the ampule, damage results in that constant insertions, jigging about, or other kinds of disturbances upset the balanced weight in the vaccine rendering it defect-

ive.

Upon opening the ampule, the vaccine is applied within 2 hours afterwards. Before applying, the ampule is shaken with the vaccine; the neck is cut across the top, swabbed with spirit and burnt on a flame. During this burning operation, try not to burn the body of the ampule containing the vaccine. The neck is broken off, and the vaccine is served in a pipette or a syringe with a long needle in a sterile bottle.

With the cutaneous means the vaccine is administered by means of a sterile vaccination needle across the marked skin on the outside surface of the upper arm. For this purpose, it should be swabbed with alcohol (not to apply iodine solution, sublimates or other disinfectant solution). and then the grease is removed with ether. When the ether evaporates, in a sterile optic-type pipette some of the vaccine is taken and applied on to the skin in two places (one drop for the future vaccine) 3 to 4 ins. apart. Applying the vaccine the pipette covering must not be touched. Care must be taken to apportion the contents on the skin evenly in the form of a stain or spot, and not to let it trickle away from the place of application.

Furthermore, the skin is stretched on the inner surface

of the left forearm, while the right hand by means of a vaccination needle, effects the inoculation through scratching the area 4 to 5 times, across the vaccine content that has been applied. (Be careful not to make an incision) The scratch must be a surface scratch, without drawing blood. Afterwards, the vaccine is swabbed for 1 to 2 mins. over the scratch with the flat surface of the same instrument. The vaccine must then be dried for 5 to 10 mins. and the rest is blotted and plugged with a sterile wad.

The vaccination needle which has just been used must be boiled for the next inoculation. As a rule, no general reactions are discerned from the vaccination. Local reaction is evidenced when the scratches redden slightly and in 2 or 3 days small scabs are formed which shortly fall off.

With the subcutaneous method vaccines are given in the amount of 1 ml. keeping in mind the rules of asepsis under the dorsal skin at the lowest angle of the shoulder blade, Each person being inoculated by a separate needle.

To children up to 10 years 0.3 ml. of the vaccine is given;from 11 to 14 years 0.5 mls. The site of the vaccination before administration should be wiped with a wad of moistened alcohol and slightly smeared with iodine.

Needles and syringes are sterilized only by boiling.

No general reaction occurs in the vast majority of cases. In a few cases however, lethargy, slight weakness, headache, and slight increase of temperature have been observed. In 2 or 3 days, all these symptoms disappear. Localized reaction is rare. When it does appear, it comes in the form of slight reddening and soreness at the site of the vaccine. Local reactions last from 2 to 4 days. The lymphatic ganglions in some instances swell slightly. None of these swiftly passing symptoms leave any after-effects.

Note. The vaccine is given cutaneously or subcutaneously depending on the method preferred or indicated.

After vaccination, normal rules of medical routine are observed. The people vaccinated are registered, and results of examinations are tabulated in a journal where the name of the vaccine, number in the series, method of administration and date of vaccination are noted.

The rest of the vaccine and instruments left over are boiled for one hour.

Revaccination of those already inoculated must be carried out within one year, if not already done so.

8. Measures to safeguard farm workers from anthrax.

In insanitary places and quarantined areas or on farms

and populated regions where medical attention for anthrax is difficult to come by, the staff must be issued with protective clothing, overalls and galoshes.

These must be disinfected after use. No one whose hands or other exposed parts of the body bear scrathes, abrasions, or any other evidences of injured skin is permitted to treat sick animals, or clear away carcasses, or take part in the cleansing and disinfection of contaminated premises.

In quarantined areas:

milk from sick animals or animals suspected of anthrax must not be consumed and must be destroyed.

milk from other healthy animals at quarantine centers can be consumed only after boiling.

milk from animals which have been vaccinated a second time (Tsenkovsky's type) is allowed to be consumed for the first 15 days thereafter only after boiling.

milk from animals inoculated with STI vaccine can be consumed without any restrictions.

C. Compulsory measures to be taken when humans get infected.

These are as follows: The sick person must be hospitalized straightaway in complete isolation for specialized

medical treatment. (see the sections headed "Hospitalization and Treatment").

If the patient dies, burial or dissection of his corpse must be carried out in observation of the established rules.

In the room or quarters where the anthrax patient or suspect is located, a careful, final, disinfection of the premises, furniture, objects used in treatment, bed and bed appurtenances, linen, etc., must be effectuated.

Personnel from disinfection or epidemic control centers must carry out decontamination under the guidance of a doctor who must be present.

The doctor must observe the following points when supervising a final decontamination process undertaken on a sick person's premises.

a) expose all infected belongings and suspect objects in general, where the patient is located, including his surroundings.

b) take out such relevant objects in the room and from the premises and despatch them for disinfection.

c) decide on a method of disinfection. (see the section headed "Disinfecting")

Note. In the event of a patient's death at home, the body

must be dealt with according to the "Rules for the transportation, dissection, and burial of bodies fatally stricken with anthrax", and then his possessions and premises must be completely disinfected.

When the source and causes of infection have been traced, then a careful epidemiological inquiry is carried out.

In this regard, special attention must be given as to the patient's job, his type of occupation, and where he had been engaged 7 or 8 days before contracting the disease.

Veterinary and sanitary data, as well as laboratory results from the investigation of various objects must be utilized in the process of unearthing the origin of the disease.

This process of tracing the origin, source, and breeding ground permits appropriate counter-anthrax measures and prophylaxis to be applied within a veterinary and hygiene framework designed to quell the disease and prevent it spreading.

Note. The following are considered sources and breeding ground locations of anthrax:

places where anthrax-stricken animals are housed (cattle yards, isolated cattle stalls, pens etc.);

slaughter-houses and disinfection centers of the anthrax-ridden carcasses, or carcasses being dissected;

burial points for same;

objects containing animal material and by-products, whether in a semi- or finalized state, by which the disease is transmissible to man;

objects belonging to anthrax-stricken patients.

In such centers or on such objects outlined above, final decontamination is carried out. Also, codes of sanitary and hygiene duties should be tabulated for people coming in contact with animal material and by-products as well as for people attending to anthrax victims or touching their things.

Such people should have a counter-anthrax serum in doses of 25 to 50 mls. or more (depending on conditions of the disease and on the degree of contact with the infected material). Dosage may sometimes be given jointly with penicillin (500,000 to I million units). Such people should be under observation for 8 days.

Information on human cases are conveyed

a) to the immediately superior institute or department(or to which the informant is responsible),by phone or special message;

b) to the ministry of health of the appropriate republic by means of a special report;

c) to the responsible veterinary doctor or assistant serving the area, farm, or institution where the infection occured;

d) to the executive committee of the soviet of workers' deputies in the appropriate region.

Anyone who is liable to catch a second anthrax infection must receive the vaccine prophylaxis STI.

Centers of infection (peopled towns or cities, farms, development sites etc.) must be kept under observation till the disease is completely liquidated.

Hospitalization procedures, regime to be applied, and methods of registering and discharging anthrax patients.

All patients irrespective of how suspect they are or irrespective of the type of anthrax they have contracted must be immediately treated and hospitalized.

They must be put into the infection wing of the hospital, or if there isn't one as may be the case in a remote agricultural region, then into isolation or isolation ward.

They must undergo a special regime during their period of confinement.

Staff attending such sick patients must take personal preventive measures. Such medical staff should be divided

up according to whether the treatment is for lung, intestinal, or septic anthrax cases.

India rubber gloves and isolated overalls must be worn when nursing the patient in bed.

Lung and septic cases require the use of treated glasses and cotton gauze bandages.

Those who have recovered from the cutaneous type of anthrax are written off from the hospital only after the scab has fallen off, and after epithelization and cicatrization. For the other types - septic, lung, and intestinal - patients are written off and discharged only after clinical recovery and two successive negative results from a bacteriological examination have been obtained, carried out at intervals of 5 days. Blood, sputum, faeces, and urine are examined, irrespective of the type of anthrax contracted.

Procedure for autopsy and burial of fatal anthrax cases.

The body is wrapped in a sheet moistened with 10% chloride of lime (or chlorous calcareous 'milk'), and then placed in a coffin made with large boards clamped together, 3 to 4 cms. thick. The coffin is placed in a layer of calcium carbonate and this is strewn on all sides of the coffin. Its lid is then nailed down and isn't to be opened again.

Cremation should be carried out where possible of both coffin and body. Burial is performed otherwise.

Bodies are buried in the normal cemeteries. The coffin shouldn't be lowered less than 2 m into its grave.

Whenever subsoil water is present, then the coffin is placed in a thoroughly tar-smeared chest (smeared both inside and out). The gap between the chest and the coffin is filled up with dry calcium hypochlorite, and the chest nailed by stout nails and fastened with a tight-fitting tar-smeared lid.

Whenever disinfection hasn't been carried out before the body has been taken out of the ward or premises, then the body is removed and placed in the coffin, observation of the rules mentioned above being strictly kept. Disinfection of the premises is then proceeded upon. 20% chloride of lime (or chlorous calcareous 'milk') is abundantly sprinkled on the coffin from all sides.

Bodies stricken with anthrax are not subject to autopsy when bacterial diagnosis has been definitely established. Autopsy is performed only in extreme or doubtful cases by a doctor who then must conclusively disinfect all the premises, objects, instruments, overalls, gloves, shoes, etc..

Conveying the body to its place of interment is done with strict regard to the rules outlined above.

Measures for safeguarding the health of disinfection staff serving in anthrax-prevalent localities.

Only skilled people in both decontamination techniques and in anti-anthrax vaccination procedures are allowed to do the job of disinfecting and cleansing anthrax-ridden locations.

People with scratches, grazes, or any kind of damaged skin, on face, limbs, or other exposed parts of the body are not allowed to engage in disinfection work on anthrax-infested locations. Thick special clothing, hoods, India rubber gloves and boots, as well as gas-masks are provided to all workers engaged in infected areas.

Disinfection personnel, while engaged in decontaminating anthrax-infested areas must wear gas-masks since chlorine and formaldehyde are extremely poisonous. If the skin is affected at all, hot solutions of caustic soda are indicated; but when the eyes are affected, loss of eyesight can result.

In view of the difficulty of working in gas-masks while decontaminating the premises with 20% chloride of lime (or

chlorous calcareous 'milk'), even a light solution of it, it's necessary to send out two squads at one and the same time - each squad working I or 2 hours and then being replaced by the other. Upon finishing the task at hand, the decontamination squads must submit to a thorough similar decontamination of all their clothing, shoes etc..

These things, together with any other suspect materials that may have gotten into contact with the causative organisms of anthrax, must be decontaminated in the following way:

a) in a steaming hot room at a temperature of II0 for 90 mins. (provided such things stand up to these conditions without deteriorating);

b) in a boiler, where they are boiled for 60 mins. in I to 2% soda solution;

c) moistening in I% active solution of chloramine for 2 hours at a temperature of 20 ; 5 1 of the disinfecting solution for every I kilogram of the objects' weight.

Note. Objects to be disinfected are sent to the decontamination centers in a strong container. India rubber boots and gloves are disinfected in 4 hours in 4% solution of formaldehyde, or in 2 hrs. in I% active chloramine solution.

METHODS OF DECONTAMINATING OBJECTS

INFECTED WITH ANTHRAX SPORES

Type of Anthrax (1)	Objects, Materials to be Disinfected (2)	Current Disinfection at the time (3)	Final Disinfection (4)
All forms	Objects that are wrapped (cotton wool, gauze, compress paper, bandages, wad plugs, serviettes, etc.	(Flies must be destroyed on the premises before disinfection). After use they are gathered in a special vessel and destroyed by burning.	Same
Intestinal, lung and septic types.	Liquid remains of the food of the patient.	Boiled for 1 hr. in a closed vessel or mixed with dry calcium hypochlorite in the proportion of 1 part per 2 of the food remains, then within 2 hrs. if there is no sewerage, then put it into cesspit.	Same
All types	Patient's utensil's for all purposes	Every time after use, boiled in 2% solution of sodium for 1 hr.	Same
All types	Patient's dirty linen, both clothing and bed, dressing-gown and outer clothing worn by others near the patient	Disinfected then and there. Bed linen, serviettes, towels and other objects are moistened in warm 1% active solution of chloramine, exposure 1 to 2 hrs., 1% of active solution of	Same

(1)	(2)	(3)	(4)
	or by staff attending the patient.	calcium hypochlorite active exposure for 90 mins., 0.2% solution of formaldehyde at a temp. of 70° and exposure for 60mins., and 0.2% formaldehyde in a mixture with 0.2% soap solution or 0.2% OP-10 at a temp.of 60° and exposure 60 mins. With these solutions, the linen is moistened in a proportion of 5 l. of sulution per 1 kgrm. of the linen. If the linen can't be disinfected then and there, then it is sent in a stout container to the nearest disinfection center, in a boiler or hot steam room.	
All types	Bed appurtenances (pillows,mattresses cotton and woolen clothes, bedspreads etc.	Bed appurtenances are packed in a strong container and sent to a formalin vapour room at 104 to 111° for 10 mins at 0.2 to 0.5 atm. (provided they stand up to this treatment without spoiling.)	Same
Lung, intestinal and septic type.	portable objects used by patient 2 or 3 wks.before infection; other including those contacted by the the patient himself.	Packed up and dispatched in a strong container for decontamination.	

(1)	(2)	(3)	(4)
All types	The premises of the patient including the rest of his quarters, and, also objects of furniture.	Floor, walls, furniture are disinfected by one of the following ways:- a) Double sprinkling of4% of light active solution of calcium hypochlorite (or chloride of lime) containing 10 grm.of active chlorine and 1.25 grm. of ammonia to 1 litre of solution; b) Double sprinkling of 4% of active chloramine (activator is a chloride or sulphate of ammonia in a dose of 5 to 10 grm.per 1.l. c) double sprinkling of 20% of light solution of calcium hypochlorite (or chloride of lime) or 15% solution of the same(with a 2/3 rd. base of salt). containing not less than 5% active chlorine. d) for premises with walls covered with oil paint a hot (55^{0}) 5% solution of formaldehyde with 5% solution of soap, must be applied, with a double sprinkling. e) furniture and such like objects in the patient's room must be carefully wiped with cloths moistened by one of the above mentioned solutions. Boil and disinfect after use for 1hr. in a closed vessel. Notes 1) Disinfection of dirty rooms and premises where animal products like meat,	Same

(1)	(2)	(3)	(4)
		hide, coat etc. have been handled and extracted from anthrax stricken animals is carried out by the same method. 2. In so far as there isn't enough data on the transmission of anthrax from a sick to a healthy man via the skin or a skin type, it is sometimes allowed to clean up by means of a careful manual application of frequent swabs impregnated with kerosin and water. 3. The spreading is done at 30 min. intervals - disinfection being regarded as ended 30 mins. after the last sprinkle. Keep all windows open. 4. Amount of disinfecting liquid should be 900 mls.per 1 m² of sprinkled surface for porous surfaces like bricks and plaster, and 500 mls.for non-porous surface.	Same
Lung, intestinal and septic.	Excreted parts of the patient(faeces, urine, phlegm & vomitive matter.	Excreted parts of the patient are mixed in a dry solution of calcium hypochlorite (or chloride of lime), the proportion of 1 to 2, and carefully mixed together. The excreted parts are left for 2 hrs. in a closed vessel. After which they can be poured out down a drain or sewer. Notes. The vessel for gathering the excretion should be enamel or glazed with a tight-fitting lid.	Same

(1)	(2)	(3)	(4)
Lung intestinal & septic.	Chamber pots, urine samples, bed-pans, & spitoons.	They are separated from the excretions, and put into a special tightly closing tank with a light 20% solu- of chloric calcareous 'milk' for 60 mins. and carefully washed with hot water. For the service of each patient there should be a vessel for taking away the excretions.	Same
Ibid	Latrines, rubbish bins, cess-pools.	If a connection has been established with the origin of the infection, then it should be liberally sprinkled with 20% solution of chloride of lime twice at intervals of 3 hrs. The contents are strewn with dried chloride of lime to keep away flies. Refuse left after disinfection, such as valueless rags and strands etc.are burnt.	Same

Appendix

Differentiating facts, morphological and biological facts concerning anthrax and other soil bacilli derived from tests.

Name of bacillus	Mobility	Growth in Oxygen	Spore formation	Capsule formation	Gram Stain	Liquid broth ↙ Meat broth ↘	media: broth with blood
1.	2.	3.	4.	5.	6.	7.	8.
Bac. Anthracis	-	+	+	+	+	Growth in 7 to 8 hours; broth goes clear with cotton-like deposits slowly forming, but without forming a film. If a ring or circle has fastened on, it washes away slightly.	No hemolysis

Bac. anthracis (cond.)

Solid media		Pathogeny		
gelatine	agar	mice	guinea-pigs	rabbits
9.	IO.	II.	I2.	I3.
Low horizontal outgrowths stick out along the seam, resembling a fir-tree upside down. Thinning out takes place in 3 or 4 days.	Downy white colonies appear when slightly magnified consisting of a mesh of threads like a ringlet of hair.	They die in 24 hours.	Die in 24 to 36 hours.	Die in 36 to 72 hrs.

I.	2.	3.	4.	5.	6.	7.	8.
Bac. pseudo anthracis.	Weak +	+	+	-	+	Broth blurs; a crumby deposit is formed at the bottom, breaking up only with difficulty; the ring or circle is washed away with difficulty. A film is formed on the surface.	Hemolysis
Bac. anthra coides	Weak +	+	+	-	+	ibid.	ibid.

9.	IO.	II.	I2.	I3.
Bac. pseudo-anthracis (cond.)				
A mass of whitish branches fan out along the seam. Jelly thins out.	Hard round whitish colonies appear with thread wound round the edges in separate segments.	Pathogeny sometimes obtained with mice injected with large amounts of the culture in the abdominal cavity.	none	none
Bac. anthracoides (cond.)				
Thick nodes appear along the seam, but no shoots. Jelly thins out.	ibid	ibid	ibid	ibid

I.	2.	3.	4.	5.	6.	7.	8.
Bac. subtilis	Lively	+	+	-	+	At first broth blurs then clears after a film is formed.	-
Bac. mesenteri-cus.	Lively	+	+	-	+	Broth stays almost clear with the forming of a wrinkled film	-

9.	IO.	II.	I2.	I3.
Bac. subtilis (cond.)				
On the gelatine the colony is surrounded by a wreath or circle from rays; on the surface of the jelly when diluted, a film appears.	Mat greyish-white growths rise up the wall of the test-tube. A film forms in condensed water.	none	none	none
Bac. mesentericus (cond.)				
Roundish colonies form with thinning out of the jelly.	Thick mat wrinkled white coating or layer forms with a film forming in condensed water.		←ibid→	

I.	2.	3.	4.	5.	6.	7.	8.
Bac. megatherium.	Weak	+	+	+	-	+	Slight deposit with no film forming.	-
Bac. mycoides	Weak	+	+	+	-	+	Broth stays clear; a cotton-like lump forms on the bottom without breaking up on being shaken.	-

9.	IO.	II.	I2.	I3.
Bac. megatherium (cond.)				
The jelly dilutes, fanning out like a peacock.	A slimy greyish-white layer or film coating appears.	none	none	none
Bac. mycoides (cond.)				
The jelly quickly thins out.	Soft felt-like growths appear.	none	none	none

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INSTRUCTIONS ON THE PROCEDURE FOR THE PROTECTION, MANAGEMENT, AND DELIVERY OF PATHOGENIC BACTERIAL CULTURES, VIRUSES, AND OTHER MICROBES, AND ALSO BACTERIAL TOXINS AND TOXINS FROM ANIMAL SOURCES

Approved by the Chief Sanitation-Antiepidemic Administration of the Ministry of Health USSR, 19 March 1954

(Excerpts)

I. General Section

(1) In all scientific research and teaching institutes, sanitation-epidemiologic stations and laboratories working with bacterial cultures, viruses, toxins, and toxins of animal origin, a single obligatory order for the preservation, shipment, and care of these during the time of handling has been established. This order is designed to ensure the safety of work in laboratories and to exclude the possibility of transferring cultures and toxins beyond the limits of the institution without a special decree.

(2) Different bacteria, viruses, and other microbes, as well as toxins, are subdivided into four groups with respect to their pathogenic activity. With respect to each of these four groups, a definite order for the storage, and care of these within the laboratory has been established.

Group I. Agents of highly contagious diseases (especially dangerous infections): smallpox, glanders, tularemia, brucellosis, anthrax, psittacosis, and ornithoses, encephalitides, rabies (street virus), poliomyelitis, yellow fever, hemorrhagic fever, and rickettsial diseases (typhus, tsutsugamushi disease, Rocky Mountain spotted fever, Q fever).

(3) In institutions which work regularly with pathogenic bacteria, viruses, and other microbes of group I, it has been resolved that there shall be collections of strains for scientific, production, and diagnostic purposes.

(5) In institutes and other institutions which are working with cultures of group I, a special laboratory (museum) shall be organized which shall contain live cultures which shall be headed by a person responsible for the laboratory entrusted to him and for the compilation of documentation on the distribution and procurement of the cultures.

(6) In the laboratory (museum) are concentrated all the strains existing in the institution.

(8) The laboratories (museums) of live cultures shall be headed by bacteriologists with no less than 3 years' experience in this specialty. The heads of laboratories of live cultures shall be approved

by the Chief Sanitation-Antiepidemic Administration of the Ministry of Health USSR in the case of institutions of the central group, while in the other institutes they shall be approved by the sanitation-antiepidemic administration of the ministry of health of the union republic at the recommendation of the director of the institution.

In small laboratories in which there are only one or two physicians, the responsibility for the care of the collection of live cultures shall rest with the director of the institution (laboratory).

(9) All cultures in the laboratory as well as those newly arriving, together with all information on their movements (subcultures, passages, transfers, disappearance, and so forth) shall be registered in specially numbered books, which shall be firmly bound. For this purpose, in museums and laboratories working with live cultures, the following books shall be provided:

(a) An inventory book of museum cultures (form No. 1). In this book are recorded by number all existing and newly arriving strains, following their identification, with an indication of the name of the microbe or virus. In the inventory book shall be recorded each strain of group I, the maintenance of which in the museum or laboratory is deemed necessary for one or another reason.

(b) A book for the registration of isolated cultures (form No. 2). Strains which are isolated in the process of diagnostic work and which are not to be maintained are recorded in the book of isolated cultures.

(c) A journal for the registration of the movement of cultures within the museum (form No. 3) is necessary for laboratory in which strains are kept which are recorded in the inventory book of museum cultures.

(d) A journal for the registration of infectious material (form No. 4) is required for all laboratories concerned with bacteriologic work.

(e) In the book for release of cultures and toxins (form No. 6) are recorded all shipments both in the laboratory of the institution itself as well as to other organizations.

(f) Upon shipping cultures to other institutions, a passport of the culture, as shown in form No. 7, shall be filled out.

(10) All books and other documents relating to cultures (acts of procurement and extinction, declarations, statements on the isolation of cultures) are to be kept by the person responsible for these cultures in cabinets under lock and key, in iron boxes or in locked drawers. The use of these documents is permitted only to persons responsible for working with these cultures.

(11) Test tubes and ampules containing such strains should be clearly marked with indelible ink, covered at the top with a thin layer of paraffin, and should bear a tag secured with a rubber band containing the name of the agent, the number of the strain as recorded in the inventory book, and the date of culture. Working cultures should likewise be clearly marked.

(12) Upon subculturing museum cultures, the following conditions should be observed: (a) only one type (strain) of microbes is permitted on the working bench at any given time; (b) museum cultures are cultured in special ovens; (c) passages of museum strains of viruses are performed in specially designated quarters.

(13) After subculturing museum strains onto new culture media, the cultures from which the subcultures were taken are destroyed and this fact is recorded in the appropriate journal. The destruction of the old cultures shall be performed after testing the homogeneity and purity of the subculture, appropriate inscriptions on the new and old cultures, and so forth. Duplicates of unopened test tubes containing cultures may be kept in the museum for purposes of scientific observation, but this fact must be noted in the appropriate journal.

(14) Museum strains of cultures are kept in the refrigerator or in a non-heated cabinet in closed ampules which have been sealed under vacuum. If the strains cannot be dessicated, they should be kept on agar in the refrigerator in sealed test tubes (two test tubes with slanted agar and a single core); organs removed from infected animals are kept in test tubes containing 50% glycerin in the refrigerator.

(15) All refrigerators, cabinets, and ovens with cultures must be kept locked, and at the end of the working day they are closed and sealed with sealing wax. The keys for the locks, the seals, and so forth are kept in the office of the head of the laboratory. To leave cultures on work benches, as well as in open or unsealed storage places upon concluding the working day is categorically forbidden. The doors to the quarters where live cultures are kept are locked and sealed. In laboratories where cultures of group I are maintained and used, the windows must be covered with a grating. Keys to the laboratory quarters as well as to the doors of the building itself are placed in a special cabinet in the care of a watchman. The building in which pathogenic cultures are kept must be guarded.

(16) Upon interruption of scientific work (holidays, detached service, and other causes), the collections of cultures as well as the appropriate books are transferred from the sectional laboratories to be kept in the laboratory of living cultures.

Note. 1. Temporary release for storage in the laboratory of living cultures requires written directions of the scientific worker with subsequent confirmation by the director or assistant director of the scientific section. Cultures will be received for storage only in sealed containers.

2. Cultures received for storage in the laboratory of living cultures shall be kept in sealed cabinet. Subcultures of cultures kept in the museum shall be performed only upon written request of the person submitting them and with the permission of the director.

3. In scientific research institutes with a large volume of microbiological work, cultures being used by the associates of the institute

may be left in the sectional laboratories and kept in unheated cabinets or in the refrigerator in a sealed form.

(17) All cultures of bacteria and viruses, as well as infected animals received by the directors of one or another department (laboratory), shall be recorded in the inventory book (form No. 1 and form No. 2) and in the appropriate journals regarding the movements of infectious material (forms No. 3 and 4) and kept in the department. The transfer of subcultures of these strains to separate scientific workers shall be registered on forms No. 3 or 4 and a receipt given.

(18) The release of strains from the laboratory (museum) of living cultures within the department or laboratory of one and the same institution shall require a written permission by the head of the department or the director of the institute (physician) or his assistant in the scientific division.

(19) The transfer of cultures from one department to another within the same institution must have the permission of the director of the institute and must be accomplished through the laboratory of living cultures (museum) with obligatory note made of this fact in the book of release of cultures (form No. 6). This note shall indicate whether the laboratory of living cultures has tested the transferred culture; a passport is required for the culture.

All books relating to cultures in departments and laboratories must be numbered, sewn, and bound by the press of the department or institution.

(20) Cultures of microbes of group I newly isolated by the bacteriologic departments of the antiplague institutes, sanitation-epidemiologic stations, and other institutions in the course of their investigative and research works, are subject to identification and study. An identified culture is then recorded in the inventory book (form No. 1), and its movements are recorded in the journal (form No. 3). Isolated strains which are not of interest and which are not to be maintained are recorded on form No. 2 and destroyed (form No. 9). If the strain is subject to prolonged maintenance, it may be transferred to the laboratory of living cultures with the permission of the director of the institution.

(21) If cultures of group I are isolated in institutions which are not permitted to maintain them, upon receipt of a written order from a higher institution, the culture is destroyed or is transferred to an institution which is permitted to maintain cultures. Destruction of a culture must be accompanied by the composition of the appropriate document.

(22) Every worker receiving cultures of strains of group I for his work or animals infected with any of these strains, as well as the head of the department himself, is required to record the movement of these cultures throughout the course of the working day, with obligatory isolation of the remnants of the cultures on each successive day. All of this is recorded in books on forms No. 3 and 4.

(23) In the museum for the individual maintenance of strains, metal cabinets with metal panels shall be provided. These cabinets or panels are to be placed in non-heated metal cupboards or in the refrigerator.

(24) Cultures which are to be used for the preparation of live vaccines are kept in separate cabinets. After subculturing, the cultures are placed in the oven, and the ovens are used only for the culturing of these strains during this time. The preparation of vaccines from these strains is performed in accordance with special instructions.

(25) Each laboratory working with the agents of any of the four groups is required to have metal water-tight tanks with covers for the collection of materials (vessels, carcasses of animals, and so forth) and subsequent sterilization of this material. Tanks containing infected materials must be sealed.

(26) All cultures which are to be destroyed, whether museum cultures or working cultures, are turned over to a special assistant for destruction by autoclaving, with a note to this effect being made on forms No. 1 or 2. The carcasses of infected animals and their organs, the remnants of feed, and bedding are collected upon completion of the work in a vessel containing a disinfecting solution and are turned over for destruction by means of burning or autoclaving, with a note to this effect being made in the journal relating to infectious material.

(27) Upon change in personnel of a department, laboratory, or division in connection with the dismissal or release of personnel responsible for maintenance, all documents (books, passports, documents, orders, etc.) relating to the maintenance and movements of cultures, as well as the keys and seals, are turned over to the replacement in accordance with a document containing a description and the numbers of the transferred documents and of the test tubes containing the cultures.

(28) Control of the fulfillment of the present instructions within an institution will be the responsibility of the heads of the departments and laboratories. Inspections shall be carried out not less frequently than once every three months.

(29) The present instructions shall be carried out in all institutes, institutions, and laboratories which have anything to do with pathogenic cultures, viruses, and toxins. In the event that the instructions are disregarded, the guilty parties shall be required to answer for their irresponsibility.

(30) All previously issued statements on the order of maintenance and release of cultures shall be replaced upon publication of the present instructions.

(31) Responsibility for the recording of live cultures within institutes and laboratories (departments) shall rest upon the director of the institution and upon the head of the laboratory (museum) of live cultures, as well as on the heads of departments, and, in institutions of the sanitation-epidemiologic service, it shall be the responsibility of the chief physicians as well as the heads of laboratories (museums) of live cultures.

III. Rules for Working With Agents of Group I

(32) All work with cultures of group I may be performed only in institutions which have special permission of the Chief Sanitation-Antiepidemic Administration of the Ministry of Health USSR. This work shall be carried out only in specially equipped laboratory quarters which satisfy the requirements of complete isolation and safety for the surrounding environment, and which possess all the requisite means of work safety for the personnel working in them.

(33) All work of institutes, antiplague and other specialized institutions, and laboratories which is associated with cultures of pathogenic microbes and viruses of group I shall be performed in strict accordance with the special instructions "On the Working Regimen," which has been approved by the Ministry of Health USSR.

(34) A list of institutions which are permitted to work with live cultures of group I has been approved by the Chief Sanitation-Antiepidemic Administration of the Ministry of Health USSR. A list of associates who are permitted to work with live cultures of group I in each institution is approved by order of the director of the institute.

Note. The privilege of transferring and procuring cultures of group I for work in laboratories, institutes, and other institutions is enjoyed only by physicians (medical and veterinary) and biologists.

(35) Each worker working with cultures of group I is provided with a separate oven, cabinet, or isolated sealed box, or has a separate part in a cabinet or oven and, insofar as possible, an individual refrigerator.

(36) Upon completion of work with a strain or when it is no longer necessary that it be kept in the museum, the worker responsible for the given strain, with the agreement of the head of the department, must destroy all existing subcultures of this strain in the presence of a commission of workers of the department. The fact of annihilation of the cultures is then recorded on forms No. 8 and 9 with a note being made in the inventory book of museum cultures or in the book relating to isolated cultures (forms No. 1 and 2).

(37) Transfer of cultures from one department to another within a building is accomplished in closed metal boxes which are specially designed for this purpose. The transfer of cultures from one building to another must be accomplished in sealed boxes.

The Order of Release of Cultures, Pathogenic Bacteria and Toxins (Beyond the Limits of the Institution)

(49) The release of bacteria and viruses of group I from institutes and other institutions is permitted only with the approval of the director of the State Control Institute of Medical and Biological Preparations imeni L. A. Tarasevich.

In order to obtain cultures of microbes of group I, the director of the institution must present a request in two copies with a stamp and a round seal with the name of the director of the State Control Institute of Medical and Biological Preparations imeni L. A. Tarasevich.

Cultures of group I will be sent express upon receipt of a request with permission, an official letter with a stamp and round seal and passport or a personal certificate.

Note. The signature of the person to whom the culture is assigned must be verified by the director of the institute.

(50) An institution receiving a culture is required immediately to send a written receipt concerning the culture along with a verifying document.

The worker responsible for the culture must take charge of sending this information and must make an appropriate note of this in a book (form No. 6).

(51) Bacteria of group I may be sent beyond the limits of a given institution only on solid nutrient media or in a dessicated state, except in cases in which the cultures are to be kept in glycerin.

Test tubes with cultures must be sealed and placed in special metal containers, which, in the sealed form, are then placed in wooden boxes.

Boxes containing cultures must be sealed. The release of the cultures requires a passport (form No. 7).

(52) Materials for virologic studies (individual organs of animals or humans) may be sent express in test tubes or containers with 50% solution of glycerin in rubber containers which are water tight, which are then placed in a thermos bottle containing ice, the thermos bottle being sealed.

(53) The transfer of cultures of group I from one institution to another or from the place of their isolation is approved by the head of the given institution by means of transportation especially designated for this purpose (automobile, airplane, etc.) or by train (in an individual compartment) accompanied by two persons, one of which must be a physician.

(54) A shipment of cultures is opened in the laboratory (museum) of live cultures in the presence of a commission which must include the director of the given institution, the head of the museum, the head of the laboratory or department, and the physician who is to work with this culture.

A document is provided for cultures received (form No. 10).

The accession is recorded in the inventory book and in the journal of movement of cultures (forms No. 1 and 3).

Form No. 1

Inventory Book of Museum Cultures

No.	Name of Microbe in Latin Transcription	Special Designation	No. of Strain	Time of Isolation	Site of Isolation (oblast, city, village)
1	2	3	4	5	6

From Whom Isolated (name, No. of case history, and from what material)	Whence the Strain Was Sent, No. of Accompanying Passports	Date of Submittance	Characteristics of the Strain Indicated in the Passport	Remarks Concerning Destruction or Transfer	Remarks
7	8	9	10	11	12

Note. Movements of museum cultures are recorded in the "Journal of Movements of Cultures of the Museum" (form No. 3).

Form No. 2

Registration Book of Isolated Cultures

No. 1	Name of Culture 2	Time of Isolation 3	From Whom Isolated (Name, No. of case history, etc.) 4	From What Material Isolated 5

Characteristics of Strain (morphology, biochemical activity, serologic characteristics) 6	Record of Transfer for Study (when and whither the culture was transferred, No. in inventory book) or of Destruction of the Culture (date of destruction and No. of document) 7	Signature of Person Responsible for This Book 8

Note. Movements of isolated cultures before their transfer to the museum or before destruction are recorded in the "Registration Journal of the Movements of Infected Material" (form No. 4).

Form No. 3

Registration Journal of Movements of Cultures in the Museum

Name of Microbe in Latin Transcription	No. of Strain	No. in Inventory Book	Movements of Cultures: Test Tubes (flasks, etc.) With Cultures: Date	No. at Beginning of Working Day	Subcultured (or received)	Destroyed	Transferred: Whither	No.	Voucher of Receipt	Remaining at End of Day
1	2	3	4	5	6	7	8	9	10	11

Movements of Cultures: Ampules With Dessicated Cultures: No. at Beginning of Working Day	Subcultured or Received	Destroyed	Transferred: Whither	No.	Voucher of Receipt	Remaining at End of Day	Signature of the Head of the Museum
12	13	14	15	16	17	18	19

Note. For records on each strain, no fewer than two pages are to be left in the journal (columns may be placed both to the left and the right); if the laboratory does not have at its disposal dessicated cultures, then in compiling the journal, columns 12-18 are to be left empty. Recordings in the journal are to be made only on the days on which there are changes in the movements of cultures. Museum cultures to be dried are recorded in the movements of cultures. Different types of vessels with cultures (test tubes, flasks, dishes, and so forth) are recorded in columns 5-11 separately.

Form No. 4

Registration Journal of Movements of Infected Material
(During Diagnostic or Experimental Work)

		Registration of Test Tubes (dishes, flasks, etc., containing cultures)			
Date	Name of Culture or Analyses	No. at Beginning of Working Day	Cultured or Received	Destroyed or Transferred	Remaining at End of Working Day
1	2	3	4	5	6

Registration of Test Tubes (dishes and so forth containing organs of animals				Registration of Infected Animals (by species			
No. at Beginning of Working Day	Received	Destroyed or Transferred	Remaining at End of Working Day	No. at Beginning of Working Day	Infected	Died or Killed	Remaining at End of Working Day
7	8	9	10	11	12	13	14

Registration of Dry Cultures					
No. of Ampules at Onset of Working Day	Obtained From Dry State	Destroyed or Transferred, Whither, and No.	Voucher of Receipt	Remaining at End of Day	Remarks
15	16	17	18	19	20

Note. If the laboratory (or worker) does not work with one or another material (for example, animals or dried cultures), then in filling out the journal he should leave empty the corresponding columns. In working with infected chick embryos or some other material for which there is no corresponding form, the necessary

columns should be added in the journal and the movements of this material recorded therein. Upon transferring cultures to the museum (or to another worker), a note to this effect is made in the corresponding column (5 or 17) with indication of the person to whom (or whither) and in what number (test tubes, flasks, etc.) the transfer was effected. Upon obtaining a culture from the museum (or from another worker), an appropriate note is made in column 4 (or 8), etc. Different types of vessels containing cultures or organs of animals (test tubes, dishes, etc.) are recorded in columns 3-10.

Form No. 6

Book Concerning the Release of Cultures
(Beyond the Limits of the Institution
or From One Department to Another Within the Institution)

No.	Date of Receipt of Request	Whence the Request Was Received (whither the culture is to be sent for study)	To Whom the Order for Release or the Direction for Study Were Given, No. and Date of the Document	Name of the Culture to be Sent (No. of strain)	No. of Culture Sent -- Indicate Type of Vessel and Packing
1	2	3	4	5	6

Date of Shipment of Culture	Who Sent It	Who Received It (Name, date, and No. of voucher, No. of passport)	Voucher of Receipt	Note of Receipt of Information Concerning the Material From the Institution Receiving It, No.	Remarks
7	8	9	10	11	12

Form No. 7

Passport of Strain

Species of microbe

Strain No.

Special designation of strain

Date of isolation

From what isolated

From where received

Date of receipt

Date of subsequent investigation of properties of the strain

Characteristics of the Strain

1. Morphologic signs (form of cells, mobility, spore formation, presence of flagellae, capsules, etc.) and staining properties

2. Cultural signs -- peculiarities of growth on nutrient media:
(a) when cultured on the surface of nutrient medium (indicate on which medium and in which vessel -- in test tubes, in Petri dishes, etc., as well as the form of the isolated colonies -- their size, shape, surface, structure, transparency, color, etc.).
(b) upon stab culture in a nutrient medium slant (indicated medium, length of stab, etc.).
(c) upon culturing in liquid medium (indicate medium, etc.).
(d) upon culturing under anaerobic conditions (indicate medium, etc.).

3. Biochemical properties: fermentation of carbohydrates, alcohols, and glucosides (indicate which).
Production of indole, hydrogen sulfide
Hemolytic properties
Other peculiarities

4. Serologic properties: agglutinability by sera (indicate type, serum, and titer of serum used, by whom prepared, the highest dilution of serum, with which culture it reacted, intensity of reaction, and so forth)

Character of agglutination (O, H)
Special observations

5. Virulence: for which animals, in which doses, by which method of infection, and the material used (live culture, its age, filtrate, lysate, etc.), in how many animals was the virulence tested, what were the results (died, survived, etc.)

6. Immunogenic properties: material for immunization (live culture, killed culture, etc.), means of injection, dose, number of injections, length of intervals between injections, species of animal immunized, results of tests, strength of immunity, name of culture used for infection, age of culture, dose, method of administration, number of surviving animals

7. Special indications.
(a) method of maintaining cultures
Recipe of special medium
Optimal temperature of maintenance
Date of subculture
(b) conditions of culture
(c) medium for the production of toxin
(d) other indications

Head (director of museum of live cultures),
date, month, year

Form No. 8

Journal of Registration of Cultures
and Infected Animals Subject to Destruction

Date	Amount of Infected Material (Test tubes, dishes, etc.) Subject to Annihilation	No. of Tank	Signature of Person Filling the Tank With Infected Material	Signature of Person Receiving the Tank With Infected Material
1	2	3	4	5

Form No. 9

Outline of a Document of Destruction
of Cultures of Group I

Document

.... Date .... Month .... Year, we, the undersigned, the director of the department (laboratory) ..... of the institute (family name, first name, and patronymic) ..... scientific associates of the same department (laboratory) ..... (family name, first name, patronymic) ..... have destroyed by autoclaving (or other method) .....
in the presence of .....
Document signed by: Head of department (laboratory)
Associate of department (laboratory)

Form No. 10

Outline of a Document of Receipt
of Cultures of Group I

Document

.... Date .... Month .... Year, we, the undersigned, head of the museum of live cultures ..... head of the special department .....
have compiled the present document with respect to the fact that .....
.....
.....
(indicate in detail whither the shipment was sent, which documents accompanied the shipment, the correspondence between the documents with the labels on the packages, etc.), and also describe in detail the external appearance of the packing, the contents of the shipment, the state in which the packages were received, the condition of the test tubes, etc.
The document is signed by: Head of the museum of live cultures
Head of the special department
Scientific associate of the museum of live cultures
Seal of the special department

INSTRUCTIONS FOR WORKING IN HOSPITAL STEAM DISINFECTING CHAMBERS,

WORKING WITH STEAM UNDER PRESSURE AND UNDER NORMAL ATMOSPHERIC PRESSURE

Approved by the Chief State Sanitation Inspector of the USSR on 8 October 1959

(Excerpts)

1. Basic Positions

(1) In steam disinfecting chambers, disinfection is accomplished of wearing apparel, bedding, and also soft inventory, as well as industrial raw materials (hides, bristles, rags, and so forth) as well as other objects which will tolerate the effects of steam.

In addition, steam chambers accomplish the sterilization of gauze, bandage materials, and other objects (sheets, cover-alls, etc.).

Steam chambers are also used for the disinfection of wearing apparel, bed linen, and other objects of the soft inventory.

(2) The active disinfecting agent and steam chambers is dry flowing steam at 104-111 and 118-120°, as well as steam under normal atmospheric pressures (at a temperature of 100°).

(3) Steam chambers may not be used to process leather, rubber, silk, velvet, capron and oil-skin objects, as well as objects which have parts made of hide, fur, rubber, silk, velvet, and so forth.

One should not use steam chambers to disinfect objects or materials which are dyed with nonresistant colors or materials which have different colors, especially printed cloth, since these objects or materials may lose their original color under the effects of the steam.

Note. In view of the fact that wearing apparel and other woolen objects lose their strength by as much as 30% under the effects of steam, it is recommended that they be processed in formalin vapor chambers, and, in the absence of these, steam chambers may be used provided the steam is under normal atmospheric pressure (100° C), and provided that they are treated one at a time.

(4) Bed linen and other materials contaminated with excretions (urine, feces, blood, pus, etc.), should not be disinfected in steam chambers, since this leads to the formation of unremovable stains. Such linen should first be processed in washing machines or in disinfecting buckets or should be soaked in disinfecting solutions.

(5) The norms for loading the chambers with bed linen in working with steam under pressure, is 50 kg/cu m of chamber volume.

The norm for loading chambers with wearing apparel when working with steam under normal atmospheric pressure and at a temperature of 100° is 10-12 pieces with an average weight of 6 kg each (total of 60-72 kg) per square meter of area of the trolley. The working area

of the trolley is as follows: (a) in the Krupin chamber with a volume of 2.76 cu m the working area is 1.3 square meters; (b) in the Krupin chamber with a volume of 1.5 cu m the working area is 0.9 square meters; (c) in a Rubner chamber with a volume of 5 cu m the working area of the trolley is 2.5 square meters.

II. The Order of Work in a Chamber

Process of Disinfection

Exposure to Disinfecting Process Depending on the Indices of Temperature and Pressure of the Steam

Nature of the Disinfection Process	Loading Norms	Temperature in °C	Pressure of Steam as Determined by a Manometer	Exposure Time in Minutes
Disinfection in cases of infection with vegetative forms of bacteria				
(a) wearing apparel	10-12 pieces per square meter of working area	100	0	10
(b) bed linen	50 kg per cubic meter of volume of chamber	104-111	0.2-0.5	40
Disinfection in cases of infection with spore-forming forms of bacteria				
(a) wearing apparel	10-12 pieces per square meter of working area	100	0	30
(b) bed linen	50 kg per cubic meter of volume of chamber	104-111	0.2-0.5	60

Note. Disinfection and sterilization when using steam at a pressure of 1 atm and a temperature of 118-119° in stationary steam chambers performed in accordance with the special instructions of Kotlonadzor.

III. The Order of Servicing a Chamber

Upon disinfection of objects contaminated with agents of highly dangerous infections (anthrax, glanders, plague, cholera), the disinfector of the loading department of the chamber carries out all of his work in a special outfit (cover-alls, hood, rubber gloves, goggles, and a cotton mask). Upon completing the loading of the chamber, the disinfector disinfects the quarters and places his entire outfit of special clothing in the chamber, with the exception of the rubber boots, gloves, and goggles, which are disinfected on the spot by the wet method.

INSTRUCTIONS FOR WORK IN STEAM-FORMALIN

HOSPITAL DISINFECTING ROOMS

Approved by the Chief State Sanitation Inspector of the USSR on 8 October 1959

(Excerpts)

I. Basic Positions

(1) In steam-formalin chambers, disinfection of objects is carried out by a steam-formalin or steam-air method, while disinsectization is carried out by the steam-air method.

(2) The active agent in disinfection by the steam-formalin method is a steam-air mixture in combination with the vapors of formaldehyde at a temperature of 42-59° (as measured by an exterior thermometer).

(3) The active agent in disinfection and disinsectization by the steam-air method is humidified hot air (a steam-air mixture). Disinfection is carried out at a temperature of 80-97°, and disinsectization at 49-57° and also at 80°.

(4) In working with the steam-formalin and steam-air methods, the relative humidity must be not less than 80%. In order to determine the relative humidity, the chamber should be provided with two thermometers -- a dry and a wet (August psychrometer). The ratio of their readings is then used to determine the relative humidity in the chamber. When the length of the difference in the readings of the wet and dry thermometers does not exceed 4°, the relative humidity may be considered within the limits of that required.

(5) The steam-formalin method is used to disinfect objects which are damaged at temperatures of 60° as measured by an exterior thermometer: objects made of skin, fur, rubber, footwear, etc.

The steam-air method is used to disinfect objects which are not damaged at temperatures above 60°: wool, cotton, oil-skin, objects made of velvet, and of natural or synthetic silk -- of the capron type, as well as pillows, mattresses, and blankets.

Disinsectization of cotton and wool objects is performed by a steam-air mixture at a temperature of 80-90°, and of leather or fur objects at a temperature of 49-51 and 57-59°.

(6) Bed linen, especially that contaminated with excretions (urine, feces, pus, blood, etc.) should not be disinfected in the chambers; they should be decontaminated in washing machines or in disinfecting solutions.

(7) Objects which are to be disinfected in the chamber are sorted, being subdivided into those which are to be disinfected by the steam-formalin method and those which are to be disinfected by the steam-air mixture in accordance with paragraph 5.

(9) With the steam-formalin method of disinfection, objects are loaded into the chamber individually in special baskets, or in such a way that there is no contact between them, while with the steam-air method, they are loaded in ordinary baskets.

The norms for the loading of the chambers with wearing apparel in cases of infection with vegetative and spore-forming forms of bacteria vary from 2 1/2 to 5 pieces (with an average weight of 6 kilograms each) or a total of 15-30 kilograms per square meter of working area of the chamber.

When the chamber is loaded simultaneously with wearing apparel and bed linen (mixed loading), the norms of loading per square meter of working area of the chamber are as follows:

In the case of mixed loading:

(a) bed linen is hung out in staggered order;

(b) mattresses and blankets are placed in the chamber on wooden racks or hooks; pillows are hung on hooks with the aid of strings attached to one corner of the pillow;

(c) children's wearing apparel and other contaminated objects are hung out in two rows for which standard hooks measuring 40-60 cm in length are used.

(10) With the steam-air method of disinfection, in cases of contamination of objects with vegetative and spore-forming forms of bacteria, the loading norms vary from 8 to 10 pieces, or a total of 48-60 kilograms per cubic meter of working area of the chamber.

II. Order of Work in Stationary Steam-Formalin Chambers

A. Disinfection by the Steam-Formalin Method

Preparation of the chamber for work and loading of items

(12) Before beginning work, checks are made of the steam pipes and of the jets for the admission of steam into the chamber. Then the chamber is heated to 60° C (as measured by the exterior thermometer) by admitting steam through a perforated tube, maintaining this temperature for a period of 15 minutes. After this, the chamber is ventilated and items are loaded into it.

Note. The action of the jet should be tested periodically with the use of water. For a more precise determination of the quality of the spray, it is recommended that the water be lightly dyed (with ink), and that large sheets of white paper be hung on the opposite wall of the chamber. The regulation of the jet atomizer is then determined by the quality of the spray.

(13) Objects which are to be disinfected are then loaded into the chamber in special baskets; items with fur trimming (short coats) are first turned inside out so that the fur is on the outside.

Felt boots and regular boots are hung with the tops downward, while shoes, slippers, and so forth are placed on grids or else hung on racks and hooks.

(14) Disinfection of items is accomplished under different temperature conditions (57-59° or 49-51° as read by exterior thermometer) depending on the character of the items. A somewhat milder temperature range (40-42°) is also used for the disinfection of fur pieces (the fur of susliks, rabbits, and so forth), which tend to be damaged at the higher temperatures.

Disinfection by the Steam-Formalin Method of Leather, Fur, and Rubber Items and Footwear

Name of Infection	Loading Norms per sq m of Working Area of Chamber in pieces	Loading Norms per sq m of Working Area of Chamber in kg	Temperature According to Exterior Thermometer	Amount of Formalin per cu m of Chamber in ml	Exposure in Minutes	Approximate Processing Time in Minutes, Not Counting Loading and Unloading of Items
Spore forms of bacteria	3	18	57-59	250	165	215

Method of Processing and Type of Bacteria	Number of Items of Clothing	Loading Norms of Bed Linen in Exchange for Pieces of Clothing			
		Mattresses	Pillows	Covers	
				Woolen	Cotton
Steam-formalin (spore forms)	3	2	3-4	5	3-4

Disinfection of items contaminated with spore forms of bacteria

(26) Disinfection is carried out at a temperature of 57-59°, and the loading norms in the case of spore forms of bacteria are 3 pieces per square meter of working area of the chamber; the norm for formalin is 250 ml per cubic meter of chamber, and the exposure time is 2 hours 45 minutes. Loading of the items into the chamber is accomplished in accordance with paragraph 13.

Note. In the disinfection of short sheepskin coats, it is recommended that a frame measuring 65 centimeters in length should be placed in them in order to keep the sleeves extended and in order to keep the fur trim out of contact. Such items should be hung out in alternating order.

(27) Upon completing the loading of the chamber and closing the doors, steam is slowly admitted until a temperature of 53° C is reached; then, formalin is sprayed in and the temperature in the chamber is raised to 57-59° (exposure time is counted from this point). During exposure, the temperature in the chamber is maintained at a level of 57-59°. At the end of exposure, the formaldehyde is neutralized.

B. Disinfection by the Steam-Air Method

Disinfection of items contaminated with spore forms of bacteria and dermatophytes

(32) Disinfection of objects contaminated with spore forms of bacteria and dermatophytes is carried out at a temperature of 97-98° with the use of loading norms of 10 pieces per square meter of working area of the chamber and exposure times of 30 minutes. Following loading of the objects, steam is admitted into the chamber until a temperature of 97-98° is reached, which represents the beginning of the exposure time.

(33) During the period of exposure, the temperature in the chamber is maintained at a level of 97-98° by means of systematic delivery of steam into the chamber. At the end of exposure, the steam is discontinued and the chamber is ventilated for a period of 10-15 minutes, following which the objects are removed.

Disinfection With a Steam-Air Mixture of Cotton, Wool, Leather and Fur Pieces

Name of Infection	Method of Disinfection	Loading Norms per sq m of Working Area of Chamber in pieces	Loading Norms per sq m of Working Area of Chamber in kg	Temperature According to Exterior Thermometer	Exposure in Minutes	Approximate Processing Time in Minutes, Not Counting Loading and Unloading of Items
Spore forms of bacteria	Disinfection	10	60	97-98°	30	75-85

III. Order of Servicing Stationary Chamber

(43) In the disinfection of objects contaminated with agents of highly dangerous infections (anthrax, glanders, plague, chclera), the disinfectors of the loading department of the chamber carry out all their work in special outfits (cover-alls, rubber gloves, boots, masks, goggles, and hoods). Upon completing the loading, the chambers are exposed to wet disinfection and the entire special outfit is loaded into the chamber.

TIMELY INSTRUCTION FOR DISINFECTING UTILITIES IN STEAM CHAMBERS

Approved by the Chief Sanitation Antiepidemic Administration of the Ministry of Health USSR on 1 August 1951

(Excerpts)

(1) All utility cloths, in view of their epidemiologic importance in the transmission of anthrax, must be suspected of being contaminated with the agent of this infection.

(2) Utility rags should be disinfected in steam chambers at a working pressure of steam in the chamber of not less than 0.5 atm as measured by the manometer.

(3) The loading norm is up to 80 kilograms per cubic meter of working volume of the chamber.

(4) Utility rags must be loaded onto the trolley of the chamber in bulk. Loading in bundles is permitted provided that all ties around the bundle are cut after loading the bundles onto the trolley. The bundles are arranged on the trolley in a single row. It is not permitted to place bundles on top of each other.

(5) After loading and closing the doors, steam is slowly admitted into the chamber while the exhaust pipe is left completely open, thereby ensuring a gradual removal of air from the chamber.

(6) When the thermometer on the exhaust pipe (the steam outlet pipe) reads 100° (implying that the air has been removed from the chamber), this pipe is partially closed, and the atomizing jet on the steam pipe is opened wide, thereby raising the pressure in the chamber as shown by the manometer to 0.5 atm. This will lead to an increase in the temperature as shown by the upper and lower thermometers in the chamber.

(7) Only when the thermometer on the exhaust pipe reads 110-111° is the exposure time considered to have begun, and this temperature is then maintained for the course of 1 1/2 hours. During this period, the pressure and temperature in the chamber are regulated by the valves for the exhaust and delivery pipes.

(8) During the working of the chamber, steam condensate is removed by opening the valve for the removal of condensate which is on the steam outlet pipe.

(9) Upon completion of the exposure time, steam is no longer admitted into the chamber. In order to reduce the pressure in the chamber to zero as shown by the manometer, the valve on the steam outlet pipe is completely opened and simultaneously the valve for admission of steam into the heating device is also opened.

(10) When the pressure in the chamber drops to zero, the valve for the admission of air into the chamber is opened, as is the valve for the admission of steam into the injector in the ventilation pipe, and the chamber is ventilated.

(11) Airing and drying of the utility rags is continued for 20-25 minutes, after which the valve for admission of steam into the ejector is closed, the door into the unloading (clean) part of the chamber is opened and the trolley containing the utility rags is unloaded.

SANITARY RULES FOR THE PLANNING, BUILDING AND ORGANIZATION OF RURAL POPULATED PLACES (COLLECTIVE FARM VILLAGES, MACHINE TRACTOR STATION SETTLEMENTS, AND SOVKHOZES)

Approved by the Chief State Sanitation Inspector of the USSR on 26 January 1956

(Excerpts)

Choice of Locality for the Construction of a Rural Population Point

Localities for the construction of rural population points should meet the following basic requirements:

It is forbidden to construct population points and agricultural settlements at areas where animals dying of anthrax have been buried. The use for construction purposes of areas on which stables containing animals with brucellosis have been constructed is permissible only after plowing the territory of the region and permitting it to lie fallow for a period of 3 months.

SANITARY RULES FOR THE PREPARATION OF WATER-PROTECTION BEDS AND CANALS FROM FLOODS AND THE SANITARY PROTECTION OF THEM

Approved by the Chief State Sanitation Inspector of the USSR on 19 May 1956

(Excerpts)

General Positions

The present sanitation rules apply to the performance of the following works for the preparation of the beds of reservoirs and canals for flooding;

Relocation of the populace, transfer of population points, industrial enterprises, buildings, and equipment;

Sanitary preparation of the territory;

Measures for the sanitary maintenance of reservoirs and canals.

Sanitary Preparation of the Flood Territory

In the complex of sanitary preparation of territory for flooding are included:

The sanitary cleansing of the territory from which population points, agricultural centers, industrial enterprises, and areas of mass contamination are being removed;

Removal of natural and domestic plant cover;

Measures to be taken at burial sites.

The sanitary cleansing of territories of animal objects, and also of enterprises for the storage and processing of raw products of animal origin which may be found in the flood zone, are carried out in accordance with the epizootic situation of the farms and enterprises:

In farms and enterprises which are free of infectious disease the manure, stable bedding, and liquid sewage from sewage collectors is transported to agricultural fields which are beyond the limits of the territory of the zone of sanitary cleansing; if removal of this material is impossible, manure and dirty bedding are burned on the spot, and liquid sewage from the stables is spread out over the surface of the earth with subsequent plowing. The territory of the farm is then plowed over during warm spring and summer season prior to flooding;

On farms and enterprises in which infectious diseases prevail (anthrax, black quarter, tetanus), manure and the liquid refuse and stable bedding are burned on the spot, and the soil under these quarters (stables, barnyards, etc.) where cases of anthrax, black quarter, or tetanus have been detected, are soaked with a solution of chlorinated lime containing 5% active chlorine, or a 4% solution of formaldehyde,

or a 10% hot solution of a sulfuric-carbolic mixture, after which a layer of soil 25 centimeters deep is dug up and removed beyond the limits of the territory of the zone of sanitary preparation and is buried within an animal grave at a depth of not less than 2 meters. In exceptional cases, with the approval of organs of sanitation supervision, it is permitted to pile this soil in the zone of the dead space (at a level below that of the ground waters) in special trenches at a depth of not less than 1.5 meters, provided that it is later dusted with chlorinated lime in a layer of not less than 3 centimeters and then covered with noncontaminated earth and tamped down. After digging up and removal of the soil, the territory of the infected farms is covered with dry chlorinated lime in an amount of 5 kilograms per square meter of surface area; this is then moistened and plowed to a depth of 25 centimeters.

Remnants of structural debris, straw and bedding, rotten wood, etc., which remain at the sites of transferred population points are burned on the spot, and metal fragments which cannot be burned are gathered together and transported beyond the limits of the territory of the zone of sanitary cleansing.

All dumping sites, scrap heaps, cesspools, filtration fields, and so forth which are within the zone of sanitary cleansing, must be closed and should be plowed over not later than one spring-summer season prior to flooding the reservoir.

Purifying sewage equipment (septic tanks, biofilters, etc.) are either enclosed or carried away. Sites of location of purifying sewage equipment are plowed under.

Cleansing of the territory after removal of factories and plants is carried out on the same bases as settlements.

In the presence of specific contaminants (leather factories, woolen mills, slaughterhouses, utilization factories, storehouses for poisonous chemicals, gasoline dumps, and so forth), the territories of these enterprises must be disinfected with removal of the soil and transportation of it beyond the territory of the zone of sanitary cleansing.

Measures at Burial Sites

Anthrax animal graves, situated in a zone being prepared for a reservoir, if they are more than 2 meters deep, must be secured. If these measures are not sufficient to prevent erosion and washout of the graves, they must be removed.

Anthrax animal graves situated within an area of bank washouts, must be removed.

In transferring anthrax animal graves, the following sanitation rules should be observed:

(a) The work should be so far as possible mechanized;

(b) The soil of the territory of the animal grave should be removed en bloc to a depth of 3 meters;

(c) In transferring the soil and remnants of animals from animal graves, these should be soaked (in order to prevent the creation of dust and also for partial disinfection) with a 20% solution of chlorinated lime and, in the wet form, loaded on a dump truck; the dump truck is then covered with a tarpaulin, which is also soaked with a solution of chlorinated lime;

(d) The reburial of the animal remnants of the soil is performed in special trenches with a depth of not less than 3 meters, which are to be dug in localities agreed upon by the organs of state sanitary supervision and the veterinary service. The trenches should be dug in such a way that machines carrying the infected soil may approach from one side, while the clean earth removed from the trenches which is to be used for covering the graves is piled on the other trench;

(e) Workers participating in this work should be immunized against anthrax and should be examined by a physician during the course of the work and for 10 days after its termination, and should also be instructed prior to the work with regard to measures of personal prophylaxis;

(f) Persons participating in the reburial of soil and animal remains should be provided with protective sanitary clothing (rubber boots, rubber gloves, cover-alls and masks -- a multilayerd mask which will cover both mouth and nose);

(g) Upon completing work each day, the sanitation protective clothing is removed by the worker on the working site and is subjected to disinfection with a 5% soapy solution of formaldehyde at a high temperature (70-80°), and masks are burned;

(h) Working instruments, machines, and the excavator are not removed beyond the limits of the animal grave and are not used for other purposes prior to completion of the work, at which time they are subjected to disinfection. Initially, the surfaces of all iron parts are flamed; then they are washed with a stream of formalin-kerosene emulsion consisting of 10 parts of commercial formalin, 10 parts of kerosene, 5 parts of creolin, and 75 parts of water heated to a temperature of 65-70°.

INSTRUCTIONS FOR THE INVESTIGATION IN DRINKING WATER FOR THE CAUSATIVE ORGANISM OF TYPHOID, PARATYPHOID, DYSENTERY, CHOLERA, AND ANTHRAX

Approved by the Ministry of Health USSR on 27 June 1955

(Excerpts)

I. General Positions

A. The Selection, Storage, and Transportation of Samples

(1) Samples of water for study for the presence of pathogenic microbes should be taken by specially instructed laboratory workers.

(2) Samples of water are taken in sterile flasks with fitted stoppers. Sterilization of the flasks and the fitted stoppers is carried out separately; in this, the flasks are tightly closed with cotton balls, and the fitted stoppers are wrapped in paper and tied to the necks of the corresponding flasks.

In the absence of flasks with fitted stoppers, samples of water are taken in carefully washed bottles which are tightly closed with cotton wadding and covered with a paper wrapping which is tied about the neck of the bottle with a thin twine.

(3) A vessel for taking samples of water should be preliminarily sterilized with dry heat for a period of an hour at 160-170°.

(4) Prior to taking the samples, all points from which water is to be taken (the faucet of a drinking tap, drinking fountains, etc.), are flamed (burned), then the water is delivered (about 30 liters), after which, without turning off the water, samples are taken for analysis.

(5) Upon taking samples of water from taps and water pipes, filling of the vessels is carried out in the following fashion: the twine is untied from the neck of the flask, then the cotton wadding is removed together with the paper, after which the sample of water is placed into it without touching the neck of the bottle against the faucet or pipe from which the water is flowing. In this, the bottle should be held at an angle and filled not quite full, but rather to about 4/5 of the volume. The stream should be regulated in such a way that filling of the bottle occurs without interruption.

(6) After filling with water, the bottle is closed with the cotton wadding enclosed in the paper, or with the fitted stopper, whichever is available, and the paper wrapping is then tied around the neck of the bottle with the twine.

(7) In the event that samples must be taken for bacteriologic study from wells or cisterns in which there is no pump, the samples of water may be taken with the aid of a bucket immersed in the well. The most advisable method in a sanitary sense for taking samples for analysis by means of this method is to immerse a specially prepared sterile vessel, provided with a weight, into the well. The vessel, which is wrapped in gauze and paper or in paper alone, is sterilized together with the weight and the twine. The sterile vessel is then unwrapped only immediately before taking the sample of water.

The sterilized vessel is then dropped into the well opened, and at the same time the cotton wadding is held in the hand by means of the paper wrapping.

(8) For bacteriologic analysis, the sample of water should be 1-3 liters, and not less than 500 milliliters.

In studying samples for the presence of the anthrax bacillus, samples of water are taken in quantities of 3 liters. In addition to this, in studying water directly from reservoirs or water tanks, the sample should be taken into another sterile flask both from the surface layer of the water as well as from the bottom of the reservoir in amounts of 100 milliliters.

(9) The following data are then entered in the laboratory journal:

(a) Designation of the water source (well, artesian well, water pipe, etc.);

(b) Location of the source from which the sample is taken;

(c) Where the sample was taken: from the tap of a domestic faucet, from a drinking fountain, from the mouth of a well, from the faucet of a pump, from the pipe of a well pump, from a mine well, etc.;

(d) By whom the sample of water was taken (name, position);

(e) For what reason the study is being carried out;

(f) Date and hour at which the sample was taken, as well as the date and hour at which the sample was sent to the laboratory.

(10) During the summer time, it is necessary to protect bacteriologic samples against heating and the effects of sunlight, and during the winter, they must be protected against freezing.

In the case of absence of a fitted stopper in the containers of samples of water for bacteriologic studies, it is necessary to protect the cotton wadding against becoming wet.

B. Preparation for Analysis

(11) Studies of samples of water for anthrax bacilli are carried out with the aid of No. 3 membrane filters.

Preparation of the apparatus

(12) When dry, membrane filters catch fire very easily and quickly burn up, but when they are wet they can be used quite safely. Therefore, in cases in which membrane filters are kept in large quantities, they should be stored in a 20% alcohol solution. If the number of membrane filters being stored is not very large or if they are dispersed in small quantities in different spots, then they may be stored in the dry form.

A brief (less than one year) storage of membrane filters in the dry state does not lead to any significant changes, however, in their properties or in their structure.

(13) Membrane filters are sterilized for 30 minutes in distilled water with the addition of 4-5 drops of formalin. After the first 15 minutes of boiling, the water is poured off and is replaced by fresh distilled water (without formalin), after which the filters are again boiled for 15 minutes. This operation is performed twice. After completing the sterilization, the membrane filters are left in this water until they are used.

Filtration of water

(14) After sterilization, membrane filters are placed, using flamed and cooled forceps, in a Zeits apparatus for filtration or in a device at the Rublevskaya Pumping Station of the Moscow water system.

The above-mentioned devices are preliminarily sterilized either in the autoclave or with alcohol, or by boiling in a closed vessel (a Koch apparatus or in a closed kettle).

(15) In case the Zeits filter is used, in order to protect the membrane filters against damage, a sterile circlet of filter paper is placed on the metal grid. These filter papers are previously cut out in accordance with the size of the membrane filters, and are packed 10-15 pieces in a pack in paper packets and are sterilized with dry heat at 160° for one hour on the middle shelf of a drying cabinet. A single circle of the paper is then taken up with a flamed and cooled forceps and, while observing the rules of sterility, is transferred onto the Zeits filter, after which it is lightly moistened with sterile water.

(16) A forceps, which has been flamed in the flame of a Bunsen burner and cooled, is used to pick up the membrane filters and transfer them to the Zeits apparatus for filtration. It is necessary to be sure that the edges of the membrane filter are uniformly applied to the metal fitting of the filter. Then the filter is assembled and secured tightly with the metal grips. The Rublevskiy device or the Zeits cylinder is then filled with the necessary volume of water to be filtered and the vacuum pump is turned on.

Note. Under conditions of hurried work or in the absence of the usual type of pump, it is possible to adapt a bicycle pump with a reversible valve for producing the vacuum (a Shints apparatus); a clamp is applied to the rubber tubing when the first drops of filtrate appear.

(17) In order to avoid clogging the filters, the filtration is carried out in small amounts through several membrane filters, during which, depending on the rate of filtration, 25-50 milliliters of the water being tested is filtered through each filter. After each filtration, the pump is turned off. In order to isolate pathogenic bacteria, it is necessary to filter no less than 500 milliliters of water.

(18) After completing the filtration of the water, the upper part of the filtering apparatus is removed and the membrane filter is taken off with a flamed and cooled forceps and placed on nutrient media in such a way that the surface with the retained microorganisms is facing upward. The filter is slowly applied to the nutrient medium, beginning from the free edge and ending with the edge which is grasped with the forceps.

The membrane filter is then pressed slightly onto the nutrient medium so that no air bubbles remain between the membrane filter and the medium. Four filters can ordinarily be placed in a Petri dish.

(19) For water which is opalescent and contaminated with large particles, it is necessary to perform a preliminary filtration through a large-pored membrane filter (plankton filter) with subsequent filtration of the filtrate through No. 3 membrane filters. Plankton filters are also placed on the nutrient medium. The filtrate in both cases is collected in a sterile fashion and, after filtration through a membrane filter, it is checked for sterility by means of culturing.

(20) For control of sterility of the filtrate, one milliliter of the filtrate must be placed in a test tube containing broth. In case the filtrate is not sterile and negative results have been obtained in the analysis for the presence of pathogenic microbes, the analysis should be repeated.

II. Performance of the Analysis

C. Studies for the Presence of the Anthrax Bacilli

Concentration of the bacilli and preparation for analysis

(39) Prior to culturing, it is recommended that the microbes be concentrated into the smallest possible volume, for which purpose one of the following methods may be used:

1. One liter of the water to be studied is passed through No. 3 membrane filters; through each filter, depending on the weight, 50-250 milliliters should be passed. Then all filters are collected into a vessel and 10-20 milliliters of water is shaken for a period of 5-10

minutes, following which the residual liquid is used for bacteriologic analysis.

In case the water is opalescent or contains admixtures of particulate matter, the procedure suggested in paragraph 19 should be followed.

2. In case it is impossible to use membrane filters for the isolation of anthrax bacilli, a Fikker method of precipitation can be used.

To 3 liters of the water to be studied, 12 milliliters of a 10% solution of crystalline sodium carbonate (Na_2CO_3) and 10.5 milliliters of a 10% solution of ferric sulfate ($Fe_2(SO_4)_3$) is added; both solutions must be sterile. The whole thing is then shaken and left in the cold for a period of one hour.

If part of the flocculent material does not precipitate but rather gathers at the surface, the liquid should again be shaken and left for another hour. Then carefully, without disturbing the precipitate, the transparent layer of water is poured off. The precipitate, together with the remaining liquid, is poured into a centrifuge tube and centrifuged for 5 minutes. The water is then decanted from the centrifuge tube, and the precipitate is suspended in 25% sterile neutral solution of potassium tartrate ($C_4H_4O_6K_2$), which is added drop by drop, with simultaneous mixing with a loop and shaking the precipitate into solution.

Planting and culturing

(40) The washings from the membrane filters or the precipitates which are obtained by the method of concentration are divided into three parts. One part is heated at 65-70° for 30 minutes, another is planted in sugar broth (one part of precipitate to 5 parts of broth) following preliminary heating in a water bath for a period of 15 minutes. The cultures in sugar broth are then covered with a layer of liquid vaseline and placed in an oven at 37°. After 24 hours, they are heated for 15 minutes at 80°. The third part of the precipitate is not treated in any fashion.

In the first portion, all nonspore-forming forms die and spore-forming forms remain alive, including anthrax bacilli.

In the second portion, the spores of anaerobic forms grow out, which in the sugar medium are transformed into vegetative forms. Subsequent heating kills all of the nonspore-forming forms, as well as the spore-forming anaerobes which have grown out, and only the spore-forming aerobes remain (rarely, spores of anaerobes remain but these are unable to grow).

The third portion is then used for seeding and infection without preliminary treatment, in order to avoid erroneous conclusions due to the death, during heating, of certain forms of the spores of the anthrax bacillus which are not highly resistant.

(41) The first portion is then plated out on three Petri dishes containing agar and in three test tubes containing broth, while the third portion is divided among five Petri dishes containing agar and three test tubes containing broth. The seeding in the dishes is accomplished with the use of a Drigal'skiy loop from one dish to another without flaming the loop between dishes.

Calculation of the results of analysis

(42) After 16-20 hours, the cultures are examined and are searched for suspicious colonies (smooth, grey-white, more dense in the center, with a noticeable finely granular structure). Such colonies are best observed with the low power of the microscope. In typical cases, it is possible to detect interweaving of twisted threads in the form of mats of curly hair (the so-called "heads of Medusa"); the colonies are then subjected to further study for purposes of differentiation from pseudo-anthrax and from anthrachoid forms which have colonies of the same structure as the true anthrax bacilli.

First, the material from the colonies is examined by the hanging drop method (anthrax bacilli are nonmotile, whereas pseudo-anthrax in young cultures exhibits a weak independent mobility).

Then, seedings are made onto blood agar with 15-20% blood content (anthrax colonies have the form of grey-yellow compact colonies which grow without hemolysis of the blood; pseudo-anthrax and anthrachoid forms hemolyze blood).

Biologic tests

(43) A conclusive diagnosis is made on the basis of the death of mice which are infected with material from colonies appearing during the period from 12 hours to 4 days. In smears of blood from the spleen and liver of dying mice, crooked thread forms with capsules can be seen.

(44) A mixture of each of the three portions of the sample is used to infect white mice; in this, the material is injected beneath the skin of the back with the aid of a syringe. Mice which die as a result of this are studied in the usual fashion.

Studies of the precipitate for anthrax bacilli

(45) 30 milliliters of the middle sample of the precipitate is added to 100 milliliters of water and shaken for 5-10 minutes. This mixture is then allowed to stand for 10 minutes. The separated liquid is then poured off and passed through membrane filters, in the event that membrane filters are being used, or is centrifuged; the washings from the filtrate or the centrifuged precipitate are then studied for the presence of bacilli by the above-described method (paragraphs 40 and 41).

Moreover, the middle sample of the precipitate is used in an amount of 10 grams for studies by the same method without treatment.

(46) The limits of sensitivity of the method of studying the samples by the concentration of bacilli with the use of membrane filters is 200-300 spores per liter. The limits of sensitivity when the spores are concentrated by the Fikker method have not been defined.

DIRECTIONS FOR USING STI LIVE ANTHRAX VACCINE IN THE VACCINATION OF PEOPLE THROUGH SCARIFIED SKIN (ON THE SKIN)

Approved by the Committee for Vaccines and Sera of the Ministry of Health USSR on 25 May 1959.

1. STI live anthrax vaccine is a suspension of spores from a culture of anthrax vaccine strains. The vaccine is available for use in sealed ampules.

2. The vaccine should be stored in the dark at a temperature of 0 to 4°. When stored under these conditions, the vaccine may be effectively used during a period of 2 years. According to the results obtained after a recheck of the vaccine, the effective use period can be extended for another 2 years. Rechecking should be performed on a vaccine batch consisting of at least 5,000 doses.

3. Inoculations with this vaccine should be avoided (are counterindicated) in case of acute infectious diseases, marked deficiency in blood circulation of various origin, active form of tuberculosis, in case of a clearly expressed primary and secondary general state of exhaustion, acute and chronic lymphadenitis (inflammation of lymph glands) of various origin, in case of clearly expressed acute and chronic diseases of the kidneys, liver and central nervous system, severe forms of endocrine diseases, during the second half of the pregnancy period, and also in case of toxic symptoms during pregnancy of any duration. Patients suffering from chronic malaria should be given quinine or acrichin prior to inoculation and on the day when vaccination is performed.

4. Vaccination is carried out:

a. At enterprises engaged in the processing of raw materials of animal origin, especially at enterprises processing hides and wool, and also at meat combines.

b. At collective and state farms, at those points where stationary cases of anthrax sickness are observed (people coming into contact with livestock are inoculated).

c. In other cases - according to epidemiological indications (symptoms).

5. Vaccination is performed by physicians.

6. Vaccination is performed only once. Revaccination should be performed every other year.

7. Prior to use, the ampoules containing the vaccine are carefully examined. When cracks in the ampoule are discovered, or when foreign inclusions in the vaccine and a nonuniform suspension are observed, the ampoule with the vaccine is rejected. The vaccine must be used within one hour after the ampoule has been opened.

8. Prior to inoculation, the ampoule is shaken. The upper part of the ampoule neck is notched, rubbed with alcohol and scorched over a flame. The scorching of the ampoule neck is performed carefully, in such a manner as to avoid heating of the ampoule body containing the vaccine. The neck of the ampoule is broken off, and the vaccine is transferred with a pipet or a syringe equipped with a long needle into a small sterile flask. The inoculation is performed with a sterile instrument (scarifier, pen, etc.) through the scarified skin of the outside surface of the medium third section of the shoulder. For this purpose, the skin is first rubbed with alcohol (iodine, mercuric chloride and other disinfecting solutions should not be used), and is then defatted (degreased) with ether. When the ether has evaporated, a small amount of the vaccine is sucked into a sterile ocular pipet and is placed on the skin at two points of the subsequent inoculation, whereby one drop of the vaccine is applied to each spot at a distance of 3-4 cm from each other. When the vaccine is applied, the pipet should not touch the skin. Care should be exercised that the material is distributed uniformly over the skin in the form of a spot covering a sector with a diameter of approximately 1.5 cm, and that the vaccine should not flow off from the spot where it is applied. Then the skin on the inside surface of the shoulder is grasped with the left hand and pulled tight, while 4-5 incisions are made, using the right hand, with the aid of a scarifier across the applied layer of the vaccine. The skin incisions should be surface incisions, causing the appearance of extremely small drops of blood ("dewdrops") as the incisions are made. After this, the vaccine is rubbed in for 1-2 minutes with the flat surface of the same instrument.

After the inoculation, the vaccine should be allowed to dry up for 5-10 minutes, and then the remains of the vaccine are removed (blotted) with a sterile cotton wad. The person being inoculated is then allowed to dress.

The scarifier used for the inoculation is boiled before it is used again for inoculation purposes.

9. As a rule, no general reaction whatsoever is observed in the inoculated persons, and the nearest lymphatic nodes also do not increase in size. The local reaction consists in the fact that the incisions turn slightly red and small scabs are formed after 2-3 days, which soon fall off.

10. The inoculated persons are subjected to a medical checkup according to the general rules used for such a checkup. The recording of the inoculated persons, and also of the results of the examination after inoculation, is performed in a notebook, where the name of the vaccine, the batch number, the method of introduction and the date of inoculation must also be indicated.

11. The remains of the vaccine, and also the instruments used, are boiled for 2 hours after the inoculation has been completed.

DIRECTIONS FOR USING STI ANTHRAX VACCINE IN THE SUBCUTANEOUS VACCINATION OF PEOPLE.

Approved by the Committee for Vaccines and Sera of the Ministry of Health USSR on 25 May 1959.

1. STI live anthrax vaccine is a suspension of spores from a culture of anthrax vaccine strains. The vaccine is available for use in sealed ampoules.

2. The vaccine should be stored in the dark at a temperature of 0 to 4°. When stored under these conditions, the vaccine may be effectively used during a period of 2 years. According to the results obtained after a recheck of the vaccine, the effective use period can be extended for another 2 years. Rechecking should be performed on a vaccine batch consisting of at least 5,000 doses.

3. Inoculations with this vaccine should be avoided (are counterindicated) in case of acute infectious diseases, marked deficiency in blood circulation of various origin, active form of tuberculosis, in case of a clearly expressed primary and secondary general state of exhaustion, acute and chronic lymphadenitis (inflammation of lymph glands) of various origin, in case of clearly expressed acute and chronic diseases of the kidneys, liver and central nervous system, severe forms of endocrine diseases, during the second half of the pregnancy period, and also in case of toxic symptoms during pregnancy of any duration. Patients suffering from chronic malaria should be given quinine or acrichin prior to inoculation and on the day when vaccination is performed.

4. Vaccination is carried out:

a. At enterprises engaged in the processing of raw materials of animal origin, especially at enterprises processing hides and wool, and also at meat combines.

b. At collective and state farms, at those points where stationary cases of anthrax sickness are observed (people coming into contact with livestock are inoculated).

c. In other cases - according to epidemiological indications (symptoms).

5. Vaccination is performed by physicians.

6. Vaccination is performed only once. Revaccination should be performed every other year.

7. Prior to use, the ampoules containing the vaccine are carefully examined. When cracks in the ampoule are discovered, or when foreign inclusions in the vaccine and a nonuniform suspension are observed, the ampoule with the vaccine is rejected. The vaccine must be used within one hour after the ampoule has been opened.

8. Prior to inoculation, the ampoule is shaken. The upper part of the ampoule neck is notched, rubbed with alcohol and scorched over a flame. The scorching of the ampoule neck is performed carefully, in such a manner as to avoid heating of the ampoule body containing the vaccine. The neck of the ampoule is broken off, and the vaccine is transferred with a pipet or a syringe equipped with a long needle into a small sterile flask.

The vaccine is introduced in an amount equal to 1 ml, while conforming to aseptic rules, under the skin of the back near the lower corner of the shoulder blade, whereby a separate needle is used for each person being inoculated. Children under 10 receive 0.3 ml of vaccine, and children from 11 to 14 - 0.5 ml of vaccine. Prior to inoculation, the vaccination spot is rubbed with a cotton wad soaked in aldohol and is lightly smeared with an iodine tincture. After inoculation, the vaccination spot is lightly smeared with iodine tincture. Needles and syringes are sterilized only by boiling.

9. In the vast majority of cases, no general reaction of any kind is observed in the inoculated people, and the nearest lymphatic nodes also do not increase in size. In isolated cases, certain symptoms of a general reaction may be observed, expressed in the form of a feeling of discomfort, headache, slight weakness and fever. All of these symptoms vanish after 2-3 days. A local reaction is rarely observed. This reaction manifests itself in the form of a slight reddening, swelling and aching of the spot where the vaccine was introduced. The local reaction lasts for 2-4 days. In rare cases, a slight increase in the size of the nearest lymphatic nodes might be observed. All of these post-inoculation symptoms vanish rapidly, without leaving any after-effects whatsoever.

10. The inoculated persons are subjected to a medical checkup according to the general rules used for such a checkup. The recording of the inoculated persons, and also of the results of the examination after inoculation, is performed in a notebook, where the name of the vaccine, the batch number, the method of vaccine introduction and the date of inoculation must also be indicated.

11. The remains of the vaccine, and also the instruments used, are boiled for 2 hours after the inoculation has been completed.

DIRECTIONS FOR THE DIAGNOSIS OF ANTHRAX AND THE DETERMINATION OF POST-INFECTIOUS AND POST-VACCINAL REACTIVITY TOWARDS ANTHRAX BY MEANS OF AN ALLERGENIC INTRADERMAL TEST WITH "ANTHRAXIN" ANTHRAX ALLERGEN

Approved by the Committee for Vaccines and Sera of the Ministry of Health USSR on 20 February 1960.

The method for the diagnosis of anthrax with the aid of "Anthraxin" anthrax allergen is based on the specific ability of the macroorganism of an anthrax patient, who has suffered from this disease or has been vaccinated against it, to respond by means of a local allergic reaction in the form of an hyperemia or infiltrate towards the intradermal introduction of this preparation. This ability appears already during the first few days of the disease or after vaccination, and is preserved in former anthrax patients for a number of years.

Method for Carrying Out the Intradermal Test

The reaction is set up, while conforming to aseptic rules, on the inside surface of the forearm. "Anthraxin" is injected strictly intradermally with the aid of a syringe provided with a thin needle in a dose of 0.05-0.1 ml.

The same dose of a test-control liquid is injected into the skin of the other forearm by means of another syringe equipped with a thin needle.

Evaluation of the Reaction Results

In positive cases, already after a period of 6-10 hours, a hyperemia and the beginning of an infiltrate are observed at the spot where "Anthraxin" was injected. After 24 hours, the reaction is expressed quite clearly in the form of different dimensions of the sector exhibiting a skin hyperemia and infiltrate. The reaction is recorded after a period of 24-48 hours. In order to evaluate the degree of the reaction, the following scale is recommended:

Elements of the Local Reaction

After 24 hours	After 48 hours	Evaluation of the reaction
No reaction, or hyperemia without an infiltrate	No reaction	Negative (-)
Hyperemia and infiltrate	Reaction has vanished completely	Doubtful (±)
Hyperemia without infiltrate, or hyperemia of up to 15 mm in diameter with infiltrate	Hyperemia (possible infiltrate)	Weakly positive (+)
Hyperemia 16-25 mm in diameter with infiltrate	Hyperemia (possible infiltrate)	Positve (++)
Hyperemia 26-50 mm in diameter with infiltrate	Hyperemia (possible infiltrate)	Positive (+++)
Hyperemia of over 51 mm in diameter with infiltrate	Hyperemia (possible infiltrate)	Strongly positive (++++)

Remarks. 1. Hyperemia and infiltrate are taken into account only when their size is greater than 5 mm in diameter.

2. The formation of an hyperemia and infiltrate at the spot where the test-control liquid was injected constitutes a sufficient reason for the annulment of the test. The effective use period of "Anthraxin", provided it is stored in dry and dark premises at a termperature of + 4 or + 10°, is established at one year from the date of manufacture.

INSTRUCTIONS ON PROTECTIVE MEASURES AGAINST ANTHRAX

Approved by the Ministry of Agriculture USSR, 28 February 1953

General Veterinary-Sanitation Measures

1. All species of domestic animals are susceptible to anthrax.

2. Veterinary-sanitation measures to prevent the development of disease (anthrax) among animals consist of:

-- the maintenance of the requisite sanitary condition of pastures, corrals, and population points;

-- the systematic cleansing and repairing of water reservoirs, drinking sites, and approaches to watering troughs;

-- the organization of utilization plants for the utilization or destruction of carcasses of animals, and, in each kolkhoz, sovkhoz, and population point or other points which are situated near each other, the necessary provisioning of biothermal pits or animal graves, and also the proper organization of the disposal of carcasses of animals in accordance with the "Veterinary-Sanitation Rules for the Utilization, Care, and Destruction of Carcasses of Animals" approved by the Ministry of Agriculture USSR on 6 April 1951;

-- the detection of points in which anthrax prevails.

3. Stationary points threatened by anthrax consist in individual population points, separate portions of pastures and corrals, in which cases of anthrax among animals have been recorded, regardless of the time at which this occurred.

4. The demonstration of the epizootic state of threatened points of a rayon is carried out by means of studying the movement of the disease among animals in previous years regardless of the duration, the demonstration of the epizootic state of a given point at the present time.

For this purpose, the veterinary administrations of ministries of agriculture of republics, veterinary departments of kray and oblast administrations of agriculture are required, with the participation of specialists from oblast veterinary laboratories, veterinary physicians of the rayon agriculture departments, and veterinarians, for each point individually to determine:

-- the date and number of cases of anthrax occurring at a given site with respect to species of animals, on the basis of statistical and other data;

-- the presence of animal graves and individual anthrax graves with a description of the site of their disposition and their condition at the present time;

-- individual parts of pastures, corrals, bases, farm yards, and reservoirs which are unfavorable from the point of view of anthrax;

-- topographical, soil, and other local peculiarities of points in which animals are threatened with anthrax;

-- the manner of watering animals while at pasture and along the way to the pasture;

-- the distribution and the veterinary-sanitation state of meat combinats, slaughterhouses, utilization plants, storage warehouses, and sites of processing of raw animal materials, animal bases and the routes of movement of animals to the bases.

5. The veterinarian of an area or farm, on the basis of these findings, together with the chief veterinary physician of the rayon agriculture department, in consultation with the veterinary bacteriologic laboratory or veterinary station, compiles a detailed epizootologic characterization of each point.

6. For purposes of registration of points which are threatened with anthrax, the following measures are carried out:

-- the veterinarian of an area or farm keeps a special numbered and bound journal. In the journal for each threatened point, several pages are assigned for a description of all findings which will characterize the designated point (farm) as detailed in paragraph 4. Here are recorded all data on new cases of anthrax among animals, as well as all work on the elimination of anthrax (inoculations, destruction of carcasses, disinfection, etc.).

Note. The journal is a basic document for the compilation of yearly plans of antianthrax measures, as well as for a control over their affectuation. The journal is made a part of the inventory book and is kept constantly.

The chief veterinary physician of the rayon agricultural department, on the basis of these findings, makes up an epizootic map of the region for anthrax, listing on it all anthrax points, dates, and numbers of cases of the disease as well as the mortality of animals.

7. In points affected with anthrax, it is necessary to carry out a combination of meliorative veterinary-sanitation measures and immunization of animals.

Meliorative measures in points which are threatened with anthrax consist, in general, in treating the earth of kolkhozes and sovkhozes and, depending on local conditions and epizootic factors, of drying up swamps, swampy pastures, and hay fields, as well as the construction of water reservoirs, and wells which will meet the veterinary-sanitation requirements.

Veterinary-sanitation measures include the cleansing and disinfection of farmyards and quarters, the disinfection of objects used in the care of animals, the observation of the condition of animal graves and individual old anthrax graves, of cattle runs, the sites of preparation of animals, as well as of the maintenance and processing of raw animal materials, utilization plants, and other objects in accordance with the appropriate instructions, decrees, and rules of the Ministry of Agriculture USSR.

Immunization of animals for prophylactic purposes is carried out in points which are constantly threatened with or affected by anthrax.

Note. The yearly plans of performing prophylactic immunizations are compiled by the chief veterinary physician of the rayon agriculture department on the basis of data characterizing each point individually. The plans of inoculations are confirmed by the veterinary administration (veterinary departments) of the ministries of agriculture of republics, kray and oblast administrations of agriculture.

8. Veterinary workers, heads of agriculture organs, and also chairmen of kolkhozes and the directors of sovkhozes are required to familiarize the workers of the kolkhozes and sovkhozes with the nature of anthrax in animals, the methods of preventing it, and the measures of control of it in accordance with the present instructions.

Measures for the Prevention of Spread of Anthrax in Animals

9. The heads of animal husbandry farms (kolkhozes, sovkhozes, and farms) or persons in charge of animals are required immediately to report to the nearest veterinary physician or veterinary worker on cases of sudden death of animals without detectable causes; diseases of animals accompanied by the formation of rapidly growing tumors on the body; the appearance in animals of bloody effusions and evidence of marked colic (intestinal diseases).

10. Simultaneously with the report on the appearance of a disease, the head of the farm or the owner of the animal, in the event that he is unable to reach the veterinary physician must immediately take steps to prevent the spread of the disease. If the animal is being kept in a stable, and if the disease is confined to individual cases, the sick animals should be isolated in individual quarters. The stalls in which the sick animals were kept should be closed and should not be used to prior to decontamination. In the event of several cases of the disease, the healthy animals should be removed from the quarters and should not be allowed in contact with the other animals.

Quarters in which the sick animals were kept as well as the objects used in the care of them or which were in contact with them, must be carefully cleansed and disinfected.

Note. 1. When the animals are quartered without being tied in individual stalls, the healthy animals should be removed from the quarters regardless of the number of cases of sick animals.

2. The carcass of a dying animal is carried away to the place where it is to be destroyed, and it should be covered to prevent the access of flies and kept until veterinary workers arrive; it is desirable to dust the carcass with hexachlorane or chlorinated lime.

11. A veterinary physician, upon receiving information concerning the appearance of a disease or of the death of an animal suspected of anthrax, should immediately go to the farm and conduct an examination

of sick animals or of the carcasses of dead animals. Autopsy of a carcass should be performed only if it is necessary to determine the presence of the disease by this method as well as by microscopic studies of the blood.

In this case, all activities carried out in connection with the autopsy of the carcass should be performed immediately at the site where the carcass is to be burned.

12. Upon establishment of the diagnosis of anthrax in animals, thermometry of the entire herd of animals is performed on the farm (herd of cattle, horses, animals in individual yards, etc.) and sick animals or those suspected of the disease are isolated in separate groups.

13. Having established the diagnosis of anthrax, the veterinary physician, with the help of the director of the farm, organizes the cleansing and disinfection of the territory and of the quarters where the sick animals or the carcasses of the dead animals were kept, and at the same time determines the causes and the source of appearance of the disease, adopts measures for their elimination, arranges for a change of pasture for the animals of the herd among which the diagnosis was first established.

Mechanical cleansing of quarters and areas is performed only after abundant washing down with disinfecting solution.

Disinfection is performed three times at intervals of one hour with a solution of chlorinated lime containing not less than 5% of active chlorine or with a 4% solution of formaldehyde, using one liter of the disinfecting liquid per square meter of surface area during each washing. Following the last washing, the quarters are closed for three hours and then ventilated.

Metal objects are disinfected by flaming, canvas, felt, and cotton objects are treated by boiling in water or 1% soda solution for 90 minutes, while leather objects are carefully washed with a solution containing carbolic acid and corrosive sublimate with subsequent drying and smearing with tar or fat.

14. In cases in which the animals are kept exclusively in stables, individual yards, corrals, and so forth are considered threatened points if the disease was detected in them.

In the case of the development of anthrax in several farms, the entire population point is considered unfavorable or threatened.

Upon the appearance of anthrax among animals under conditions in which they are kept exclusively at pasture, the pastures in which sick or dead animals were first detected are considered unfavorable or threatened. In cases in which the animals were kept both in stables and at pasture, the entire population point, among the animals of which (in the herd, flock, etc.) anthrax first appeared is considered threatened. In the event of common pasturage in a given site of animals from several points (farms), all of these points must be considered threatened.

15. Population points (farms, areas, herds, flocks, etc.) which are threatened with or affected by anthrax are subject to quarantine.

Quarantine is imposed in the order set forth in the Veterinary Statute of the USSR.

16. The veterinary physician defines the limits of the territory subject to quarantine or threatened with infection, imposes the necessary limitations, and immediately reports this to the chief veterinary physician of the rayon agriculture department, notifies the nearest veterinary physicians and the local health organs. The appearance of anthrax is reported immediately by the chief veterinary physician of the rayon agriculture department to the rayon council of workers' deputies, the veterinary administration of the ministry of agriculture of the republic, the veterinary department of the oblast (kray) administration of agriculture, and also to the command post of military units if the latter are billetted within the territory of the rayon.

Note. Farms or villages which are adjacent to affected points are considered to be threatened.

Measures in Quarantined Points

17. After establishment of a quarantine by the local council of workers' deputies, the latter posts declarations of quarantine with an indication of the detours to be taken at all routes entering a territory threatened with anthrax and set up guard posts (cordons, and road blocks).

18. The conditions of the quarantine prevent:

(a) the transfer of animals through the quarantine territory, ingress into this territory or egress from this territory of animals;

(b) common watering of animals from wells, reservoirs, ponds, or other sources of water;

(c) regrouping, exchange, or sale of animals;

(d) shipment from the quarantined farm of milk or milk products, skins and hides, furs, hair, etc.;

(e) shipment of forage from the farm (or population point). Grain and bulky forage taken from healthy areas of the quarantined farms, which has not been in contact with animals with anthrax and which has not been contaminated with their secretions, may be shipped out after removal of the quarantine.

Grain and bulk forage gathered from various areas of the quarantined farm on which animals sick or dead of anthrax have been found may not be removed from the farm and may be used for feed for animals which have been actively inoculated against anthrax;

(f) the use of milk from sick animals or the slaughtering of animals for meat;

(g) the cutting up of the carcasses of animals (with the exception of cases mentioned in paragraph 11 of the present instructions), the removal of hides from dead animals;

(h) the performance of surgical operations with the exception of emergency cases;

(i) the holding of fairs, bazaars, etc., or exhibitions of animals within the limits of the quarantined territory, as well as any other activities associated with the aggregation of animals.

19. The veterinary physician, after examination of all animals of the quarantined point (farm or portion of farm), divides them into two groups:

First group -- animals with anthrax or suspected of it;

Second group -- animals suspected of being infected with anthrax, that is, all other suspicious animals of the given farm or portion of the farm.

Animals of the first group are treated with antianthrax serum, as well as by symptomatic means.

Animals of the second group are inoculated in a manner described in the section "Inoculation Against Anthrax" of the present instructions.

20. The veterinary physician must check on the proper disposal of carcasses of animals, the cleansing and disinfection of quarters and sites where sick animals were kept.

21. For the care of sick animals and animals suspected of the disease, it is necessary to assign individual personnel, providing them with special clothing, boots, and galoshes. The special clothing is left within this territory following work.

22. Forage contaminated with the excretions of animals with anthrax is burned.

23. Excretions, bedding, and remnants of feed of sick animals are burned at the site (in the absence of buildings), or near the infected site provided fire regulations are observed. The top layer of soil (in the stable) is removed for not less than 15-20 centimeters deep, and is then mixed with a 20% solution of chlorinated lime and carried away to the animal grave in a container which is impermeable to liquids. Excretions, bedding, and remnants of feed are soaked with a disinfecting solution prior to removal.

24. Carcasses of animals may be processed for utilization in equipped utilization plants in accordance with the "Veterinary-Sanitation Rules Applying to Utilization, Care, and Destruction of Carcasses of Animals" approved by the Ministry of Agriculture USSR on 6 April 1951. If utilization can be avoided, the carcass together with its hide is destroyed by burning. The burial of anthrax carcasses is forbidden.

The site in the pasture where the carcass of animal lay which had died of anthrax is carefully scorched, and is then soaked with a 20% solution of chlorinated lime containing not less than 25% active chlorine, or with a 10% solution of hot caustic soda; subsequently, the soil is plowed up and again treated with the above-mentioned disinfecting substances and liberally sprinkled with dry chlorinated lime in one part of lime to every three parts of soil.

25. In order to protect the health of people and animals:

-- persons on whose hands, face, or other exposed parts of the body there are scratches, fissures, wounds, or other interruptions of the skin, are not permitted to care for sick animals, to dispose of carcasses, or to cleanse and disinfect infected quarters;

-- milk from animals either sick with or suspected of anthrax, may not be used for drinking by persons or animals and must be destroyed; milk from other animals of the quarantined point may be used only after boiling;

-- the milk of animals after inoculation with the second Tsenkovskiy vaccine, may be used for drinking by persons and animals only after boiling for 15 days following inoculation. Milk from animals inoculated with the STI vaccine may be used without limitations.

Inoculations Against Anthrax

26. Prophylactic or compulsory inoculations may be carried out against anthrax.

27. Prophylactic inoculations are performed every year depending on local conditions, species of animals, biopreparations, in the autumn or in the spring in all constantly threatened or affected points for all susceptible animals.

Note. Nonimmunized animals newly arrived at a point where all susceptible animals have been immunized against anthrax must also be inoculated before being admitted to the common herd.

28. Inoculations are performed only by veterinary physicians.

29. Upon performing inoculations, a precise record is kept of inoculated animals with obligatory account being taken and recorded of the results (reactions, complications). For noninoculated animals, a separate list is kept with reasons given why these animals were not inoculated.

30. For preventive inoculations, the first and second Tsenkovskiy vaccines as well as the STI vaccine are used.

Vaccination is performed in the order established by the appropriate instructions.

31. Compulsory inoculation of animals is performed when anthrax develops in various farms and population points, at the sites of pasturage of animals, and also in farms and villages in a zone which is threatened by anthrax.

32. In the case of compulsory inoculations, the following are carried out:

(a) passive immunization with serum alone, with subsequent administration of active immunization;

(b) combined inoculations with serum and with the second Tsenkovskiy vaccine;

(c) inoculation of animals (with the exception of sheep and goats) with the STI vaccine (without serum).

33. Passive immunization is used only in the case of animals kept in direct contact with sick or dying animals.

All other animals of a given farm or portion of a farm are subject to combined inoculations or to inoculation with the STI vaccine.

34. In farms or population points which are in the threatened zone, inoculations are performed with the use of the Tsenkovskiy vaccine or the STI vaccine.

35. Veterinary observation is maintained on inoculated animals until the subsidence to all reactions to inoculation.

36. Transfer to other farms or slaughtering for meat of inoculated animals while they are being kept under veterinary observation is not allowed.

Note. The slaughter of animals for meat is forbidden during the 14 days following inoculation.

Removal of Quarantine

37. Quarantine is removed 15 days from the day of the last case of death or recovery of animals sick with anthrax, with account being taken of the end of reaction to inoculation.

38. Prior to lifting the quarantine, the veterinary physician, in conjunction with the chairman of the local council of workers' deputies, must verify the freedom of animals from anthrax, and must also carry out security measures in the farm.

Security measures include a careful mechanical cleansing of quarters for animals and of the adjacent territory with terminal disinfection. All objects used in the care of animals must also be disinfected. Cheap wooden objects are burned.

39. Upon removal of the quarantine, a document is filled out indicating the course of the epizootic prior to inoculations, the number of animals dying according to species and dates with indications of the sites where they died and the methods of destruction, the number of animals by species inoculated by one or another method, the dose of biopreparations, the numbers of the series, the dates of preparation, the names of the biofactories, the course of reaction, complications from inoculations, the course of epizootics following the inoculations, and also sanitation-disinfection measures carried out on the farm. The document must be submitted in two copies of which one remains on the farm, and the other is sent to the rayon department of agriculture for registration and control.

Measures for the Detection of Anthrax in Meat Processing Plants

40. If gelatinous infiltrates in the subcutaneous tissues are found upon slaughtering cattle, or if there is subcutaneous edema in

pigs in the region of the neck and thorax, the slaughterhouse worker is required immediately to cease work on the carcass and to report directly to the veterinary physician of the shop.

In the event of the suspicion of anthrax, the veterinary physician of the plant (slaughterhouse) immediately stops work in the shop where primary processing is performed, and then carries out all measures defined in the "Rules for the Veterinary-Sanitation Examination of Slaughtered Animals and Veterinary-Sanitation Examination of Meat and Meat Products" approved by the Chief Administration of Veterinary Medicine of the Ministry of Agriculture USSR on 10 February 1959.

41. The first veterinary examination of swine for anthrax is carried out immediately after exsanguination and prior to sending the carcass on for further cutting. The head of the swine should not be removed completely from the body, but should be left hanging by the superficial tissues of the neck. Removal of the entrails from the carcass is performed after examination by the veterinary physician of the lymph nodes -- submaxillary, cervical, parotid, tongue, tonsils, and pharynx.

42. Disinfection following the discovery of anthrax is carried out under the direct supervision of the veterinary personnel of the slaughterhouse.

Quarters for animals, corrals where groups of animals have been kept among which anthrax has been discovered must be washed with disinfecting solution, and then must be carefully cleansed mechanically of excretions, followed by disinfection with 20% solution of chlorinated lime (in this the original chlorinated lime must contain not less than 25% active chlorine), or with a clear solution of chlorinated lime containing not less than 5% active chlorine, with a 10% hot solution of caustic soda, or with a 4% solution of formaldehyde.

The same treatment is applied to the quarters, equipment, and inventory of the remaining quarters of the slaughterhouse (the walls are disinfected to a height of two meters from the floor).

Instruments are disinfected by boiling in 0.5% solution of soda in a closed vessel for not less than 90 minutes. Other metal objects are flamed. Special clothing is autoclaved or boiled in water for 90 minutes.

Manure from quarters where the carcass or the sick animal was found must be burned. Manure from the remaining part of the slaughterhouse, meat combinat, or other quarters subject to disinfection (as determined by veterinary personnel) must be burned insofar as possible, or must at least be decontaminated by biothermal methods. The production of briquettes from such manure in the nondisinfected form is forbidden.

43. All workers of the slaughterhouse in contact with animals with anthrax or products derived from them must be acquainted with the necessary measures of prophylaxis in the case of anthrax and must undergo sanitary processing in the required order.

44. Upon the discovery of animals with anthrax in meat combinats and other slaughterhouses, the slaughtering of animals is permitted only after the affectuation of all measures to guarantee the elimination of the infection.

An appropriate document must be drawn up to testify that all measures have been carried out by the veterinary personnel of the plant.

* * *

With the publication of the present instruction, the following are superseded:

The Instructions of the Chief Veterinary Administration of the People's Commissariat of Agriculture USSR of 16 October 1939 "On Measures Against Anthrax," with a supplement of 20 June 1944.

The Temporary Rules of the Chief Veterinary Administration of the People's Commissariat of Agriculture USSR "On Carrying Out Veterinary-Sanitation and Prophylactic Measures Upon the Discovery of Anthrax in Meat Combinats and Other Slaughterhouses" of 24 September 1940.

INSTRUCTIONS ON THE PROCEDURE FOR THE OPENING AND ORGANIZATION OF SLAUGHTERHOUSE CENTERS

Approved by the Narkomlegprom USSR, the Presidium of the Central Council USSR and RSFSR, the Chief Veterinary Administration of the Narkomzem USSR and the All-Union State Sanitation Inspection of the Narkomzdrav USSR on 20 January 1940

(Excerpts)

The Procedure for the Opening and Organization of Slaughterhouse Centers

(2) The selection of a site for slaughterhouses is determined by agreement with the veterinary organs of the rayon land departments and the organs of state sanitation inspection of the local health departments.

(4) The construction of the slaughterhouse is carried out in accordance with a recommended form approved by the Narkomzdrav USSR and the Narkomzem USSR.

(5) A slaughterhouse site should be selected which is beyond a population point, at a distance of not less than 300 meters from living quarters, quarters for cattle, highways, water sources, areas which are commonly used, and pediatric or therapeutic institutions.

The soil on which the slaughterhouse is situated should be dry. The level of the ground waters should be at a depth of not less than 0.5 meter from the floor of the foundation. It should be located in such a that the prevailing winds blow from a nearby population point. The location of the slaughterhouse should be such that animals can easily be driven up to it, the animal products can be easily transported from it, and contaminated and waste products can readily be removed.

(6) Slaughterhouses are organized in rural areas, cities, workers' villages, rayon centers, at points of permanent bazaars, where there are no enterprises of the Narkommyasomolprom, under conditions of local social advantage, and primarily where there is a veterinary service.

(7) The opening of slaughterhouse centers is formulated by a document of an acceptance commission composed of representatives of: (a) the local government; (b) the veterinary supervisory group of the land organs; (c) the state sanitation inspection of the rayon health departments; (d) organizations using the slaughterhouse center of the preparational offices of the Soyuzzagotkozh or the Consumer's Cooperative.

(9) The executive committees of the rayon and city Councils of Workers' Deputies approve the connection of population points, where the individual slaughtering of cattle is prohibited, to the slaughterhouse center.

(11) Organizations using the slaughterhouse centers and the veterinary supervision observe and control the illegal slaughter of cattle within the zone surrounding a slaughterhouse center, in accordance with the decree of the executive committees.

Veterinary and Sanitation-Hygienic Requirements

(35) Upon discovery of highly infectious diseases at a slaughterhouse center (anthrax, black quarter, malignant edema, rabies, glanders, epizootic lymphangitis, cattle plague, and bradzot of sheep and other diseases) in which the veterinary rules prevent the use of meat for dietary purposes, the slaughter of animals is suspended and a complete disinfection is carried out of the entire slaughterhouse center under the observation of workers of the veterinary service.

(36) Personnel working in a slaughterhouse center who are in contact with dietary products must undergo a monthly medical examination, in accordance with the requirements for medical examination of workers in dietary product industries.

INSTRUCTIONS ON THE OPENING AND EXPLOITATION OF COLLECTIVE FARM SLAUGHTERHOUSE CENTERS

Approved by the Ministry of Agriculture USSR on 7 September 1949 and the Ministry of Procurements USSR on 4 October 1949

The Procedure for the Opening and Organization of Collective Farm Slaughterhouse Centers

(1) Kolkhoz slaughterhouse centers are organized in large kolkhozes when this is deemed advantages, by decision of the entire gathering of members of the kolkhoz with subsequent approval of the executive committee of the rayon Council of Workers' Deputies.

(2) The selection of the site for slaughterhouse centers is carried out by agreement with veterinary organs of the rayon departments of agriculture and the organs of state sanitation inspection of the local health departments.

(3) The construction of a slaughterhouse center is carried out approved by the Ministry of Agriculture USSR and the Ministry of Procurements USSR, and as agreed upon with the Ministry of Health USSR.

(4) A kolkhoz slaughterhouse center should be situated outside of a population point, at a distance of not less than 300 meters from living quarters, quarters for animals, pastures, roadways, water sources, areas of common usage, pediatric and therapeutic institutions.

The soil on which the slaughterhouse center is situated should be dry. The level of the ground waters should be not less than 0.5 meter below the floor of the foundation. The slaughterhouse point should be situated on the lee side of population points as determined by the direction of the prevailing winds. The slaughterhouse centers should be situated in such a way that they are convenient for bringing animals to the slaughterhouse, taking the animal products away from the slaughterhouse, and also for the removal of contaminated and waste products.

(5) The opening of slaughterhouse centers is formulated in a document of the acceptance commission, which is composed of representatives of the local government, organs of the veterinary service, the state sanitation inspection, and the chairman of the kolkhoz.

Construction and Equipping of Slaughterhouse Centers and of Its Territory

(6) The territory of the slaughterhouse center should be surrounded by an enclosure which will eliminate the possibility of animals entering the territory.

(7) The slaughterhouse center should be provided with pure water in sufficient quantities.

(8) An area should be provided in the slaughterhouse center where the veterinary examination of the animals can be carried out prior to slaughter.

(9) The arrangement and equipment of the slaughterhouse center should conform to the requirements set forth in the approved example.

(10) For the collection of manure and other waste material, heavy containers which are tarred inside and which have close-fitting covers should be provided; moreover, the production rooms should be provided with the necessary sewers, which empty into receptacles which can easily be cleaned and disinfected.

(11) Manure, other waste matter, and the contents of the waste receptacles are then taken to an area which is set aside by order of the veterinary service and the state sanitation inspection. The liquid contents of the receptacles are disinfected on the site prior to removal, while manure and other solid waste matter is disinfected by a biological method at the dumping site.

Veterinary-Sanitation Requirements

(12) The slaughterhouse center is serviced by a veterinary physician who assumes the responsibility for the quality of the meat and meat products released from this center.

(13) All animals coming for slaughter must be subjected to a veterinary-sanitation examination with obligatory thermometry and are admitted for slaughter after approval of the veterinary personnel servicing this center.

(14) Veterinary examination and thermometry of animals are recorded in a special veterinary journal according to the following example:

No.	Date	Name of Owner of Animal	Type of Animal	Distinctive Marks of the Animal	Temperature of the Animal	Conclusions of the Veterinary Physician

(15) All carcasses, internal organs, and meat products must be examined by a veterinary physician in accordance with the veterinary laws which are currently in effect.

(16) Meat which is suitable for use without limitations, and also hides, should have glued onto them the established form of seal

by the veterinary examiner. Meat which is conditionally acceptable and subproducts are decontaminated, in accordance with the veterinary laws, under the direct observation of veterinary personnel.

(17) All workers of the slaughterhouse centers must have special clothing which meet the requirements of the established norms. Work without special sanitary clothing is forbidden.

(18) After the killing and cutting up of each carcass, the working site is cleaned and washed with water.

(19) It is forbidden to throw subproducts onto the floor. All meat products should be hung on plated hooks or placed on tables.

(20) Upon completion of the working day, the floors, the walls, the sewers, and the general equipment -- tables, hooks, hangers, buckets, and other objects which are used in the slaughtering and processing of animals for meat -- are cleaned and washed. Waste materials contaminated with blood and other residue, and wooden objects are systematically disinfected as directed by the veterinary worker. The liquid waste receptacles and containers for solid waste matter are disinfected after being cleaned.

(21) All matter to be confiscated is sprayed with a strongly smelling substance before being carried away from the slaughterhouse center and is then buried at a place designated by the veterinary personnel.

(22) Upon discovery in the slaughterhouse center of highly infectious diseases (anthrax, black quarter, malignant edema, rabies, glanders, epizootic lymphangitis, bradzot of sheep) as well as other diseases in the case of which veterinary legislation forbids the use of meat for dietary purposes, slaughtering of animals is discontinued and a careful disinfection is carried out of the entire slaughterhouse center under the supervision of the veterinary personnel.

(23) Personnel working in the slaughterhouse center and having contact with dietary products must undergo a monthly medical examination in accordance with the requirements for medical examination of workers of dietary products industries.

(24) Eating and smoking on the site of the slaughterhouse center is prohibited.

(25) The slaughterhouse center should be provided with washroom, soap, towels, a small drug cabinet, as well as a cupboard with provisions for personal clothing as well as sanitary clothing.

(26) The territory of the slaughterhouse center, including the reception area for animals, should be kept at the required level of cleanliness. The contents of waste receptacles should be regularly removed to the localities designated for this purpose.

RULES FOR THE VETERINARY-SANITATION INSPECTION OF SLAUGHTERED ANIMALS AND VETERINARY-SANITARY EXPERT OF MEAT AND MEAT BYPRODUCTS

Approved by the Chief Administration of Veterinary Medicine of the Ministry of Agriculture USSR on 10 February 1959. Endorsed by the Gossaninspektsiya of the Ministry of Health USSR on 10 June 1959 to replace the Rules approved by the Ministry of Agriculture USSR on 26 October 1951, No. I-27.

(Excerpts)

The Veterinary-Sanitation Requirements for the Acceptance and Preslaughter Examination of Animals for Meat Processing Industries

(1) The classification of animals for slaughter includes cattle, sheep, and goats, deer, Mongolian yaks, buffaloes, swine, all species of domestic birds, rabbits, horses, donkeys, mules, and camels. Slaughtering is not recommended in the case of calves, lambs (with the exception of young Karakul rams) and piglets under 14 days of age.

(2) Prior to being shipped to meat processing industries (meat combinats, slaughterhouses, abbatoirs, bird combinats, etc.), animals must be subjected to examination by a veterinary physician. A chart should be kept on cattle and horses with an indication of the number of tag, the species of the animal, its sex, and its color.

(3) On each group of animals or birds despatched to the meat processing industries for slaughter, the veterinary testimonial should be provided as indicated by the Ministry of Agriculture USSR, in which are given the name of the shipper, the species and numbers of animals, the dates and results of diagnostic studies, protective inoculations, evidence of the well-being of the animals and the sites of their origin with respect to prevalence of infectious diseases.

(5) Upon arrival of a group of animals for slaughter, the veterinary physician for the meat processing plant verifies the correctness of the veterinary testimonial, the presence of the forms of the animals, and the correspondence of their accompanying descriptions and identifying data performs a veterinary-sanitation examination of all animals and birds and performs thermometry of individual animals (by a sampling technique).

Animals which have passed the veterinary-sanitation examination and have been declared healthy, are weighed and then located in the preslaughter bins of the enterprise for a temporary period. Prior to slaughter, the animals are kept under veterinary observation and are examined daily.

(10) In the event that a suspicion of infectious disease arises in the case of the animals entering the meat processing enterprise, in the case of death of animals on route to the plant or at the time of arriving at the plant, or in case of disagreement between the number of animals in the group arriving and the number indicated in the veterinary testimonial at the site of origin, the entire group of animals, by order of the veterinary physician, is quarantined until a diagnosis of disease is established or until the cause of the disagreement of the veterinary documents is determined, but in no case for more than 3 days.

(12) It is forbidden slaughter animals which either have or are suspected of having anthrax, black quarter, glanders, cattle plague, camel plague, rabies, malignant edema, bradzot, enterotoxemia of sheep, epizootic lymphangitis, tularemia, botulism, pseudo-glanders, ornithosis or psittacosis of birds; animal products processed in biofactories by live bacteria, in less than 3 weeks from the time of processing, or processed by killed bacteria, extracts, or metabolic products of bacteria, prior to 7 days from the time of processing, as well as animals which are in an agonal condition.

Note. The agonal state of animals is defined only by the veterinary physician.

The slaughter of animals inoculated by the antirabies vaccine or vaccinated against anthrax, with the second Tsenkovskiy vaccine, the STI vaccine, the GNKI vaccine, or the vaccine against black quarter, or animals which have been given antianthrax sera for therapeutic purposes, will be admitted not sooner than 2 weeks after inoculation and only if there is no reaction to the inoculation.

All cases of acutely infectious diseases among animals arriving at meat-processing plants, or instances in which such animals have been slaughtered, shall be reported by the veterinary physician of the plant immediately to the veterinary department of the oblast or kray agricultural administration of the area of origin of the animals, and also to the veterinary organs of the area in which the particular meat processing plant is located.

Cases of anthrax, Q fever, ornithosis or psittacosis, pseudoglanders, tularemia, listerellosis, leptospirosis, arising among animals prior to slaughter or in the postslaughter veterinary-sanitation examination, shall be reported by the veterinary physician of the plant immediately to the local health organs.

(13) Upon discovery in the meat processing plant in groups (herds) of cattle or sheep and goats of carcasses of animals dying of anthrax, or upon demonstration of anthrax among the animals, the carcasses are immediately destroyed, and the sick animals are isolated and subjected to treatment with antianthrax serum. Animals which recover are kept for a period of 14 days from the day of return of normal temperature. The remaining animals of this group, if they have normal temperatures, are quarantined, given passive immunization, and examined daily by the

veterinary physician with recording of their body temperatures. Three days after immunization, animals with normal temperature are sent to slaughter.

Animals which have elevated or reduced body temperatures are immediately isolated from the group and placed in isolation, where they are exposed to appropriate examination and treatment.

Upon discovery of isolated cases of disease (anthrax) in a herd of swine (or upon discovery of carcasses of animals dead of anthrax), the entire herd is subjected to careful veterinary examination and thermometry.

All swine with normal temperature and without any clinical signs of disease are immediately sent to the sanitary slaughterhouse for slaughter under the direct observation and control of the veterinary physician.

No passive immunization of swine is carried out in such a case.

Swine which are suspected of having anthrax are isolated, subjected to treatment with antianthrax serum, and kept in isolation for 14 days from the time of restoration of normal temperature in them.

(17) In the event of arrival at a meat processing plant of meat or other products either in the fresh or in the salted form derived from animals which had to be sacrificed on route to the meat combinat, regardless of the cause of sacrifice and the presence of veterinary documents, these items are sent to a special room in the sanitation slaughterhouse for careful examination and investigation.

In all cases, if meats and other products obtained from animals which had to be sacrificed, is accepted suitable as suitable for dietary purposes, then they may be accepted by the meat processing plant for further processing (or else shipped out as such from the plant) only as conditionally usable after decontamination by a process described in paragraph 134 of the present Rules.

(18) Meat and meat products obtained from sacrificed animals, in the event envisioned in paragraph 17, should be sent to the meat processing plant with the veterinary testimony on the recognized form, with indication on this of the cause of sacrifice.

The acceptance of such meat at a meat processing plant without a veterinary testimonial or other document of like nature is prohibited.

Veterinary-Sanitation Examination of Carcasses and Internal Organs

(22) Anthrax. Upon the discovery of anthrax, the carcass, regardless of the species of animal, with all of the organs and the hide, are sent for utilization as directed by the appropriate rules, or else they are burned.

All unusable products (hoofs, ears, blood, etc.), which are mixed with products of the anthrax animal, is also subject to technical utilization or to burning.

The hide of an animal with anthrax must be destroyed, and anything coming into contact with it must be disinfected as envisioned by the "Decree on Disinfection of Raw Animal Products and of Plants for the Preparation, Storage, and Processing of Them."

Immediately after removal of the carcass and other products of an anthrax animal, the slaughterhouse must be disinfected; the workers carry out sanitary treatment according to indications and under the observation of the medical-sanitation service.

Other carcasses and products of slaughter which are capable of being contaminated with the anthrax bacilli during the course of the technological process are immediately subjected to disinfection by means of boiling, but no more than 6 hours from the time of slaughter. In the event that decontamination cannot be carried out within this period of time, these carcasses may be placed in an isolated chamber of the ice box with a temperature of not more than 10°, on condition that they be disinfected not later than 24 hours from the time of slaughter.

If this is impossible, the carcasses and subproducts are sent for utilization or for destruction by means of burning under the observation of the veterinary service.

In the event of suspicion of the presence of a septic or localized (local) form of anthrax, samples are taken from the suspected carcass (altered portions of tissue and affected lymph nodes) and these are sent to the laboratory for bacteriologic and bacterioscopic studies. Simultaneously, the carcasses isolated in a special place with measures being taken to prevent the spread of infection and to prevent decomposition of the carcass.

In the event that the results of the bacterioscopic studies are positive for anthrax, the carcass with all organs and its hide are exterminated by means of burning and all necessary veterinary-sanitation measures are carried out without awaiting the results of bacteriologic studies.

In the event that the results of bacterioscopic studies for anthrax are negative, the further handling of the carcass and other products is determined by the veterinary physician depending on the pathologic changes and the results of bacteriologic studies for anthrax as well as other infectious diseases.

In this case, the carcasses and other products of slaughter which might be suspected of being infected with anthrax bacilli are handled in the same way as indicated above. Carcasses which are seeded with anthrax bacilli in the course of the technological processes are excluded and must in all cases be destroyed.

Veterinary-Sanitation Examination of Meat and Meat Products at Kolkhoz Markets and Bazaars

(81) Meat and meat products which are offered for sale at kolkhoz markets and bazaars must be subjected to veterinary-sanitation examination at meat-milk and dietary control stations, and, if there are none of these, by veterinary specialists from veterinary institutions.

Meat and meat products examined and stamped outside the market and sent for sale at the markets must be examined by veterinary-sanitation service in meat-milk and dietary control stations, as well as meat and meat products arriving for sale at the farm shops in the market places which have been passed by the veterinary-sanitation examiner at the meat combinats and which have the stamp of veterinary examination.

(82) The following items must undergo veterinary-sanitation examination at the market places (bazaars):

(a) Meat and subproducts (heads, feet, tails, liver, heart, lungs, kidneys, ears) of all types of agricultural animals which are regularly slaughtered, as well as the meat of wild animals used for dietary purposes and received in the frozen, cooled, salted, steamed, etc., form; frozen meat and meat products are examined after thawing, for which purpose the market place should provide the appropriate quarters;

(b) Domestic birds in the dressed state accompanied by internal organs (except the intestine) and wild fowl;

(c) Meat products in the raw, smoked, or boiled form;

(d) Animal fats in any form.

Meat and meat products which are not sold at markets for the course of a single day and which are kept outside of the market refrigerators must undergo repeated veterinary-sanitation examination on the following day.

(83) Veterinary-sanitation examination is made of entire carcasses and parts of them (not less than a quarter), as well as of heads and internal organs.

(84) Upon the arrival for veterinary examination at the meat-milk and dietary control stations of carcasses of animals together with their internal organs, the owner of the meat is required simultaneously to present a veterinary certification of the state of health prevailing at the site of origin of the meat with respect to highly infectious diseases of animals. The certificate is effective for 5 days. In the absence of such certification, the meat is regarded as suspect and is sent for laboratory investigation. If laboratory studies are negative, but the presence of pathologic changes suggestive of infectious disease are found, the carcass and the organs are sent for disinfection.

Upon arrival of carcasses without the parenchymatous organs, parts of carcasses, meat products, subproducts, or of corned beef, the owner is required to present, in addition to the above-mentioned certification,

a certification of preslaughter or postslaughter examination of the animal from which any of these products were obtained. In the absence of such certification, the meat and meat products are handled as indicated above.

Carcasses of horses for veterinary-sanitation examination must be submitted together with the head, lungs, trachea, and spleen.

In the event that the above-mentioned requirements are not observed, the carcasses of horses are sent for technical utilization or are destroyed.

(85) Veterinary-sanitation examination of the carcasses and individual parts of carcasses is carried out in the following manner:

(a) The determination is made of the state of the meat on the surface and upon cut sections, the consistency and the odor of the muscular tissue, the degree of hydration, the degree of congestion, the presence of pathologic changes, of hemorrhage, of edema, and of contamination;

(b) The lymph nodes are sectioned;

(c) Examination is made of the consistency, color, and odor of the fat tissue.

(87) For bacteriologic studies of frozen meat, samples are taken at the sites indicated in paragraph 123 of the present Rules.

(88) Upon arrival of corned beef in brine at meat-milk and dietary control stations, separate studies are made of the brine (for transparency, color, odor, the presence of scum, and the reaction of the brine) and of the corned beef (bacterioscopy, taste, color, odor, molds, and slime).

(89) If there is any suspicion of the freshness of the meat and it is impossible to determine by organoleptic methods the quality of the meat and meat products, they must be subjected to laboratory studies. Meat and meat products which show obvious signs of being spoiled, or which have an odor which is foreign to them, are sent for technical utilization or are destroyed.

(90) Meat and meat products which are passed by the veterinary-sanitation examination for dietary use by human beings are stamped. Meat and meat products which are considered to be provisionally suitable are not permitted to be sold at the market in the nondisinfected form but are subjected to disinfection.

(91) Disinfection of provisionally acceptable meat is carried out by the administration of the market under the direct control of the veterinary physician of the meat-milk and dietary control station. Prior to disinfection, the storage of such meat is provided by the administration of the market under isolated conditions.

Laboratory Veterinary-Sanitation Control

(121) Laboratory veterinary-sanitation control of meat, meat products, and prepared dietary items is performed by methods described in existing standards, instructions, and manuals.

(122) Bacteriologic studies of meat and meat products are carried out in all cases in which it is impossible to confirm or deny the presence in them of the agents of bacterial infectious diseases:

(a) In the case of suspicion of septicopyemic processes and intoxication (in phlegmons, suppurating and gangrenous wounds, as well as in extensive trauma);

(b) In all cases of obligatory sacrifice of animals;

(c) In cases of gastrointestinal diseases;

(d) In serious diseases of the respiratory organs;

(e) In diseases of the reproductive organs, complications associated with difficult delivery, in acute diseases of the vagina, joints, udder, or hoofs;

(f) In cases of disturbed general condition of the animal organism, with reduced or elevated body temperature, etc.;

(g) In cases of the removal of the intestine from the carcass more than 2 hours after slaughter of the animal (especially in summer time);

(h) In the absence of internal organs and doubts with respect to the suitability of the meat and the impossibility of determining its acceptability for dietary purposes by means of veterinary-sanitation examination.

(123) Bacteriologic studies of meat are made in the laboratory in the following instances:

(b) In cases of suspicion of anthrax, the lymph nodes of an affected organ or a lymph node which collects the lymph from the site of localization of a suspected focus, as well as pieces of edematous tissue are excised.

Lymph nodes, spleen, liver, and long bones are removed as a whole without sectioning. In cases in which parts of the liver, kidneys, and spleen are taken, the surface of the cut sections are cauterized until a scab is formed. At the meat combinats, the long bones are removed only from small animals and swine.

(124) Samples taken for study, along with the accompanying document, are sent to the laboratory in a water-tight container (metal or glass vessel) in the sealed form. The accompanying document should indicate the species of animal or product, to whom the product belongs (address), what material is being sent and in what amount, the cause for which the material is being sent for study, what changes have been found in the product, the suspected diagnosis, and what studies are to be performed (bacteriologic, chemical, etc.).

(125) In case laboratory studies demonstrate the presence of infectious disease, for which animals are not admitted for slaughter (paragraph 12 of the present Rules), the carcass together with the hide is destroyed and all measures are carried out as envisioned by the appropriate instructions.

(126) Until the results of bacteriologic studies are received, the meat and meat products must be kept in isolated conditions, in the cold at a temperature of 0-4°, and where this is impossible, they must be salted, with observance of the appropriate rules.

Decontamination of Provisionally Acceptable Meat and Meat Products

(132) Decontamination is carried out in the case of meat which cannot be used for dietary purposes without preliminary sanitary processing as directed by the appropriate paragraphs of the present Rules.

Provisionally acceptable meat products obtained from animals in the nondecontaminated form must not be sent out from the plant but must be subjected to sanitary treatment in accordance with the appropriate directions of the present Rules.

(133) At slaughterhouses and at meat control stations, as well as at kolkhoz market places, arrangements must be made for the decontamination of provisionally acceptable meat.

Decontamination of meat and meat products is achieved by the use of high temperature (boiling) or low temperature (freezing), as well as by salting. High temperatures (in the autoclave or in closed or open kettles) can be used if necessary to decontaminate any type of meat or meat products.

(134) Provisionally acceptable meat and meat products are decontaminated in the following manner:

(a) All types of provisionally acceptable meat and meat products are decontaminated by boiling pieces which weigh not more than 2 kilograms, which are less than 8 centimeters thick, in open kettles for the course of 3 hours, or in closed kettles under a pressure of steam of 1.5 atm for 2.5 hours. Meat is considered decontaminated if the temperature has reached not less than 80° within the piece of meat; the color of pork on cross section becomes grey-white, while meat of other types of animals becomes grey, without signs of bloody effusion, and and the juice which exudes on the cut section is colorless and not bloody;

(c) Fat is decontaminated by raising the temperature to 100° for not less than 20 minutes, and this temperature must be maintained for this length of time within the fat itself.

INSTRUCTIONS ON VETERINARY-SANITARY MEASURES ON THE IMPORT INTO THE USSR OF CATTLE, BIRDS, DAIRY PRODUCTS, CHEESES, AND FORAGE

(Published in accordance with pages 25, 26, 27, and 28 of the Veterinary Statute of the USSR)

Approved by the Ministry of Agriculture USSR on 12 April 1958

(Excerpts)

I. General Positions

(1) The USSR receives from foreign countries animals, birds, raw animal materials, raw animal products, objects made from them, and forage produced at localities and on farms which are free of infectious diseases of animals and birds which undergo at the site of origin, or in individual cases at appropriate border control veterinary points of the Ministry of Agriculture USSR, veterinary processing and quarantine in accordance with existing instructions, and also in accordance with agreements concluded between the USSR and individual foreign countries.

(2) The importation in the USSR across the national border of animals, birds, animal raw materials, raw animal products, items made from them, and forage is affected through established border control veterinary points of the Ministry of Agriculture USSR in the presence of veterinary certificates issued by veterinary physicians of the state service of the country of origin, in which confirmation is made of the state of health of animals, birds, meat, animal raw materials, raw animal products, forage, and the sites of origin of them with respect to infectious diseases. The veterinary certificate should indicate the methods of study, the veterinary treatment of animals and animal raw products, and the results obtained. The importation of forage is permitted, in addition to the veterinary requirements, in accordance with existing instructions of the chief inspection on quarantine and protection of plants of the Ministry of Agriculture USSR.

(3) The importation into the USSR from foreign countries and transit across the territory of the USSR of animals and birds which are either sick with or are suspected of infectious diseases, as well as of animal raw materials and raw animal products and forage which is suspected of contamination with the agents of infectious disease is forbidden.

(4) All animals entering the border control veterinary points are subjected to careful clinical examination with measurement of body temperature and with treatment according to the conditions of importation, and with quarantine if necessary.

Animal raw materials, raw animal products and forage are checked for observance of the conditions of importation, for the presence of a stamp (the stamp of the veterinary service, correctness of mode of transportation, and correctness of the method of packing).

Examination of border control veterinary points of animals, of raw animal products, and forage, as well as the issuance of documents, is carried out during the times established for customs examination. In the event that animal shipments are kept beyond the established length of time, due to the necessity of carrying out veterinary measures, a document must be made out by the representatives of the customs house or the customs administration.

(5) Upon completion of the veterinary-sanitation requirements of importation and of the state of well-being of animals, birds, animal raw materials, raw animal products and forage with respect to infectious disease, the border control veterinary points issues a veterinary testimonial indicating the right of further transit of the animal shipment and forage through the territory of the USSR to the destination site.

(6) Animals, birds, raw animal products and forage undergoing transportation through the territory of the USSR into other countries, are admitted for further transportation to the destination in accompaniment with veterinary certificates of the country of origin, with a stamp on them of the border control veterinary point, the date of arrival of the shipment, and the name of the veterinary specialist who certified the transit of the shipment.

(7) In the case that the veterinary-sanitation requirements are not met for the importation of animals, birds, animal raw materials, raw animal products, and forage, or upon the appearance of infectious disease among animals (birds), or if it is found that the state of the animal raw material, raw animal products and forage is not satisfactory with respect to infectious diseases, such shipments by order of the head of the border control veterinary point are held up at the border zone or are sent back to the shipper by way of the importing organization, which fact is immediately reported to the Chief Administration of Veterinary Medicine of the Ministry of Agriculture USSR, to the administration of veterinary medicine of the ministry of agriculture of the union republic, to the veterinary department of the oblast or kray administration of agriculture, and also to the Ministry of Foreign Trade USSR.

A document is compiled regarding the detention of animals or raw animal products by joint action of representatives of the border institutions and the customs offices of the Ministry of Internal Affairs USSR.

(8) The organizations which have contracted for the purchase of the animals, birds, or shipments of animal raw materials, raw animal products, and forage detained at the border, or organizations which have accepted such shipments, must pay for the isolated maintenance of animals in separate border control veterinary point areas, the temporary isolated storage of raw products and forage, and also must meet the veterinary-

sanitation requirements of the instruction of the Ministry of Agriculture USSR as well as the orders of the head of the border control veterinary point.

(9) Organizations contracting for the purchase and importation into the USSR of animals, birds, raw animal materials, raw animal products and forage, must observe the veterinary-sanitation requirements and, in each individual case, must consult with the Chief Administration of Veterinary Medicine of the Ministry of Agriculture USSR, regarding the importation of animals, animal raw materials, raw animal products, and forage.

II. Veterinary-Sanitation Requirements Regarding the Importation of Animals and Birds

Pedigreed animals

(10) The selection and purchase of pedigreed animals is carried out in farms and localities which are free of infectious diseases such as glanders, tupping disease, epizootic lymphangitis, equine infectious anemia, plague, and generalized inflammation of the lungs in cattle, anthrax, hoof-and-mouth disease, tuberculosis, brucellosis, smallpox of agricultural animals, paratuberculous enteritis, trichomonas infection, leptospirosis, infectious vaginitis, Q fever, septic abortion, erysipelas, infectious encephalomyelitis, listerellosis, infectious atrophic rhinitis and plague of swine, skin diseases, and other infectious diseases.

The region where the purchase of pedigreed animals is accomplished should be free of hoof-and-mouth disease among agricultural animals, infectious encephalomyelitis, infectious atrophic rhinitis, and swine plague for a period of not less than 6 months preceding, and should be free of cattle plague and of parapneumonia of cattle for not less than the preceding year.

(11) Selected animals, prior to being sent to the USSR, should be kept in quarantine for 14 days on the farm of the sender, with careful clinical examination, including thermometry and laboratory investigations.

(13) Upon arrival in the USSR, pedigreed animals are kept in quarantine for a month on the farms of the purchaser or in other places and are studied during the time of quarantine for the presence of infectious diseases by methods indicated in the present instructions.

Animals for slaughter

(16) Slaughter animals (cattle, sheep, goats) are imported into the USSR from farms and localities which are free from highly infectious diseases and which have undergone a 14-day prophylactic quarantine and veterinary observation.

Slaughter animals imported from the Mongolian People's Republic

Cattle: Studies are made for the presence of brucellosis by the agglutination reaction and for the presence of generalized inflammation of the lungs by the complement-fixation reaction. In the western regions (Semipalatinsk-Byisk), studies for generalized inflammation of the lungs with the use of the complement-fixation reaction are not performed.

Sheep and goats: Studies are made for the presence of brucellosis by the agglutination reaction or with brucellysate, sheep are inoculated against smallpox, while goats (in the western areas) are in addition inoculated against infectious pleuropneumonia.

Cattle, sheep and goats are inoculated against anthrax no less than 2 weeks prior to slaughter.

Swine are inoculated passively with serum against plague and erysipelas 24-48 hours prior to slaughter.

Slaughter animals imported from the Sin'tszyan-Uygurskiy Autonomous Rayon of the Chinese People's Republic

Healthy herds of cattle, after careful clinical examination and thermometry, are sent for immediate slaughter to slaughterhouses near the border.

Healthy herds of sheep and goats, after being received in the territory of the USSR, are quarantined for 14 days. During the quarantine, studies are made for brucellosis (using the allergen or the plate agglutination reaction) and are inoculated against anthrax and smallpox. Upon completion of veterinary examination and the requisite period of quarantine, the healthy animals are sent by cattle cars to established meat combinats for immediate slaughter.

Slaughter animals imported from Turkey

Slaughter animals imported from Turkey, prior to being sent to the USSR, must be vaccinated against anthrax, and sheep, in addition, must be inoculated against smallpox not less than 14-20 days prior to shipment.

Upon arriving at the border, animals are subjected to a careful clinical examination with individual thermometry by veterinary personnel of the border control veterinary point in conjunction with veterinary specialists of organizations receiving these animals, and are then sent for slaughter to the Leninakanskiy Meat Combinat. Sheep and goats at the meat combinat undergo studies for brucellosis with the use of the plate agglutination reaction.

Slaughter animals imported from other countries

Slaughter animals imported from other countries must undergo a quarantine in the country of origin and must undergo veterinary examination as agreed upon in the appropriate international agreements.

The organizations purchasing or receiving the slaughter animals must provide sites in the USSR at the border veterinary points for veterinary observation of the animals and must put at the disposal of the head of the border veterinary point the necessary number of veterinary and other personnel.

III. Measures To Be Taken Upon the Discovery of Infectious Diseases Upon Importation of Animals Into the USSR

(17) Upon the discovery of infectious diseases among animals and birds at the border control veterinary points, the following measures are taken:

(f) Upon discovery of anthrax, infectious pleuropneumonia of goats, black quarter, plague, erysipelas, infectious encephalomyelitis of swine, and other highly infectious diseases, the admission of such a shipment of animals is forbidden and they are returned to the sender for the affectuation of measures to eliminate the disease. Upon discovery of skin diseases (scabies, etc.), clinically healthy animals may be imported provided they are sent for slaughter to the nearest meat combinat.

(18) Upon the discovery of infectious diseases listed in paragraph 17 of the present instructions, the head of the border control veterinary point of the Ministry of Agriculture USSR undertakes measures to prevent the further spread of these diseases within the territory of the USSR and immediately reports the appearance of diseases and the measures adopted to the chief veterinary physician of the rayon, to the local government organs, to the Chief Administration of Veterinary Medicine of the Ministry of Agriculture USSR, to the administration of veterinary medicine of the ministry of agriculture of the union (autonomous) republic, and to the veterinary department of the oblast or kray administration of agriculture.

(19) Permission to open the borders to the importation of animals, raw animal materials, is given by the Chief Administration of Veterinary Medicine of the Ministry of Agriculture USSR in each individual case after receiving from the border control veterinary point or the Ministry of Foreign Trade USSR of data concerning the elimination of the infectious disease and on the measures taken.

IV. Veterinary-Sanitation Measures Upon Transportation of Animals Entering the Territory of the USSR

(20) The reception, examination, veterinary treatment and watering of imported animals are carried out under conditions which exclude contact of these animals with the local animals. Animal bases for maintaining imported animals must be kept at the necessary sanitary level which will exclude the possibility of the spread of infectious diseases. Imported animals must not be exchanged for local animals and persons guilty of allowing this will be held responsible.

(21) Transportation of animals arriving at and passing over the territory of the USSR by railway, water, or air routes, as well as the transportation of slaughter animals by cattle car are accomplished in accordance with the effective instructions of the Ministry of Agriculture USSR.

(22) The transportation of slaughter animals across the territory of the USSR is affected by routes established by the Ministry of Agriculture of the corresponding republics. On route or when transporting herds of cattle the purchasing organization shall provide assistants and veterinary workers.

(23) Animals of farms which are situated near cattle runs used by imported cattle should be kept under veterinary observation by the ministry of agriculture of the republics. The use of cattle transportation tracts and runs for the maintenance and pasturing of local animals, as well as for the growing of grain or hay, is forbidden.

(24) Upon the discovery of infectious diseases among animals imported into the USSR, measures are carried out in accordance with the effective instructions of the Ministry of Agriculture USSR with regard to the control of infectious diseases.

(25) Wagons and trucks, after unloading imported animals, must be cleaned, washed, and disinfected at points established by the rules for transportation of animals and birds by railway or waterway. Manure from wagons and railway cars must be destroyed. Cleaning of the wagons on route is forbidden.

Wagons, cars, and other vehicles, released after the unloading of imported animals, are subjected to veterinary-sanitation processing in accordance with the second category.

All buildings, and areas in which imported animals are subjected to quarantine or are otherwise maintained must be cleaned and disinfected.

(26) All imported slaughter animals arriving at meat combinats must be killed not later than 2-3 days from the time of arrival.

VI. The Veterinary-Sanitation Requirements Upon Importation of Raw Hides and Furs, Pelts, and Other Raw Animal Materials

(30) Import permission is extended to hides obtained from the slaughter of cattle, sheep, goats, horses, camels, swine, and to raw furs in the fresh-dried, dry-salted, and wet-salted form, packed in bundles or parcels with soft packing, and wet-salted raw hides in boxes or cartons which are leak-proof, or in bundles wrapped in hides.

Raw hides and furs may be received from localities which are free of infectious diseases.

(31) Raw hides and furs are permitted to be imported into the USSR if accompanied by a veterinary certificate issued by a veterinary physician in the service of the country of origin which testifies that the given hide or fur derives from a locality which is free of infectious diseases and is obtained from the slaughter of healthy animals and plants which are under veterinary observation or from healthy animals which are slaughtered for meat outside of slaughterhouses.

Raw hides and furs of slaughterhouse origin, obtained from the slaughter of healthy animals in slaughterhouses (meat combinats, abbatoirs) and which have the stamp of veterinary examination, are imported without investigation for the presence of anthrax.

(32) Raw hides from animals killed outside of slaughterhouses must be investigated for the presence of anthrax by the use of the precipitation reaction in the country of origin or in points within the territory of the USSR established by the Chief Administration of Veterinary Medicine of the Ministry of Agriculture USSR.

The results obtained are indicated in the veterinary certificate. Importation permission is granted to hides which give negative test results and which are stamped with the stamp of the laboratory carrying out the studies of the raw hides and furs.

Importation and processing of such raw hides and furs is carried out in corresponding plants in accordance with the directions of the Chief Administration of Veterinary Medicine of the Ministry of Agriculture USSR.

(33) Raw hides and furs deriving from slaughterhouses, as well as those from animals killed outside of slaughterhouses (if originating in countries where raw animal materials are studied for anthrax), but which do not have a stamp or which are not clearly stamped, as well as raw hides and furs with improperly filled out veterinary certificates are not allowed to be imported.

(34) The importation of hides of marmots is permitted after disinfection of the hides at the border in chambers for the treatment of the hides with chlorpicrine with observance of the effective orders of the Ministry of Health USSR.

(35) Wool, goat down, bristles, horsehair, etc., when accompanied by veterinary certificates issued by the state veterinary physician of

the country of origin and which affirm the absence of anthrax, hoof-and-mouth disease, plague, smallpox, tularemia, and other infectious diseases either in the imported hides or in the regions of origin of them, or imported without bacteriologic study for anthrax in any form of packing.

In this:

(a) Wool which has been hot washed prior to shipment and goat down which has been processed by hand or by machine are processed or admitted for reexport without limitations. Wool and goat down destined for reexport are shipped out in accompaniment of veterinary certificates of the country of origin;

(b) Wool which has not been hot washed in the country of origin is subjected to hot washing in the USSR in wool-washing plants in agreement with the directions of the Chief Administration of Veterinary Medicine of the Ministry of Agriculture USSR;

(c) Bristles and hair imported into the USSR in a semifabricated state and which have been exposed to chamber disinfection in the country of origin, provided this is indicated in the veterinary certificate, are used without repeated disinfection, with the exception of bristles and hair which are for sanitary and hygienic purposes (the bristles of toothbrushes, brushes for hands and fingernails, etc.). Bristles and hair designated for these purposes is disinfected again in bristle plants prior to their use for the manufacture of these items;

(d) Bristles and hair imported in the raw form are immediately subjected to obligatory disinfection in special plants with the permission, in each individual case, of the Chief Administration of Veterinary Medicine of the Ministry of Agriculture USSR.

(37) Dried intestines from slaughterhouses, obtained from the slaughter of healthy animals, may be imported if accompanied by a veterinary certificate in the packaged form in boxes, crates, or bales wrapped in thick packing, dry-salted intestines, and wet-salted intestines are imported provided they are packed in boxes which are waterproof.

(38) The importation of meat, meat products, raw hides and furs, and other raw animal materials, as well as forage from other countries from which meat and other raw materials have hitherto not been received, is permitted in each individual case with the approval of the Chief Administration of Veterinary Medicine of the Ministry of Agriculture USSR and upon observance of the requirements of the present instruction.

DECREES ON VETERINARY-SANITARY CONTROL AND VETERINARY-SANITARY MEASURES FOR STATE PURCHASES, PROTECTION, AND TREATMENT OF RAW ANIMAL MATERIALS, ARRANGEMENT AND MAINTENANCE OF ENTERPRISES FOR THE PROTECTION AND TREATMENT OF RAW ANIMAL MATERIALS

Approved by the Chief Administration of Veterinary Medicine of the Ministry of Agriculture USSR on 31 July 1958

(1) In order to prevent the spread of infectious diseases among animals, to protect people from diseases which can be transmitted from animals to man, to ensure the veterinary-sanitation well-being of the animal raw product industry, a veterinary-sanitation service has been established in sites for the preparation, concentration, and transportation of raw animal products, in sites for the storage and processing of it (hide plants, plants for the primary processing of wool which have washing and sorting shops, hair factories, bone processing plants, and so forth).

(2) Veterinary-sanitation supervision is exercised over raw hides, sheepskins, raw furs, wool (both dirty and washed), bristles, hair, bones, horns, hoofs, down, feathers, raw gut, flesh, lard, and other side products obtained upon processing raw animal materials for technical purposes.

(3) The veterinary-sanitation service of plants for the preparation, storage, processing, and utilization of raw animal materials is performed by the staff veterinary personnel of the plants or, if there are none such, by the veterinary personnel of institutions of the agricultural organs under the general direction and control of the chief veterinary physician of the rayon (or city) by methods defined by the decrees of the Ministry of Agriculture USSR.

(4) All enterprises and institutions concerned with the preparation, storage, processing, and transportation of raw animal materials, as well as all veterinary positions servicing these enterprises and institutions, must be registered with the chief veterinary physician of the rayon (chief or senior veterinary physician of the Gorispolkom or the city veterinary department).

(5) It is forbidden to service enterprises for the preparation, storage, and processing of raw animal materials with veterinary personnel who have not completed the middle special training for this purpose.

(6) Local veterinary organs, chief veterinary physicians of rayons (cities) are required to exercise constant control over the veterinary-sanitation condition of enterprises for the preparation, storage, and processing of raw animal materials, as well as seeing that the rules for the veterinary examinations are carried out.

(7) For purposes of the most complete scope of the veterinary-sanitation supervision of raw animal materials, the economic organizations which prepare raw animal materials both for the home market as well as for export, before the beginning of the year must report their preparational and operational plans to the veterinary department of the oblast (kray) administration of agriculture or to the administration of veterinary medicine of the ministry of agriculture of a republic which does not have oblast divisions, as well as to the corresponding chief veterinary physician of the rayon (city).

(8) It is the responsibility of the veterinary personnel of agricultural organs, and equally of the veterinary personnel of other departments which have their own veterinary service, to investigate and study the veterinary-sanitation condition of sites of preparation, storage, and transportation of raw animal materials, as well as the sites of processing, and also to carry out combined veterinary-sanitation measures in rayon procurements, as well as at sites of accumulation and processing of raw animal materials. The method of carrying out these measures by the departmental personnel is determined by agreement with the chief veterinary physicians of the rayons (cities).

Upon the appearance in a point of an epizootic or the manifestation of the fact that it is not free of infectious disease, the veterinary physician, in cases mentioned by the instructions of the Ministry of Agriculture USSR, orders a discontinuation of preparation of raw animal materials and discontinues the shipments of raw animal materials. At the same time, he takes the preventive measures with respect to prepared raw products and raw products which are on individual farms.

Veterinary workers are required to ascertain the fulfillment of the veterinary-sanitation rules and to report to the chief veterinary physician of the rayon (city) of any breaches of the rules in order that the administration of the enterprise be summoned to answer for its responsibility, and, if necessary, to stop work at that enterprise.

The order of preparation and transportation of raw materials

(9) The preparation of raw animal materials is permitted exclusively in localities which are free of infectious animal diseases, and with the permission of the chief veterinary physician of the rayon (city), and, in the case of preparation of raw animal materials deriving from rodents, permission is also required of health organs.

(10) Upon answering the question of possibility of preparing and shipping raw animal materials from points in which infectious diseases of animals have been diagnosed, it is necessary to be guided strictly by the appropriate instructions for the control of these diseases.

In this, it is necessary to keep in mind that in points which have been found infected by (and which are in quarantine for) anthrax,

cattle plague, hoof-and-mouth disease, black quarter, and smallpox, the preparation and shipment of all types of raw animal products is forbidden; in cases of equine infectious anemia, glanders, equine infectious encephalomyelitis, the preparation and shipment of raw products deriving from horses, donkeys, mules, and camels is prohibited; in the case of swine plague and swine erysipelas, it is forbidden to prepare and ship all animal products deriving from this species of animals; in cases of tularemia and rodent plague, it is forbidden to prepare and ship the hides of rodents; in cases of fowl plague, the preparation and shipment of down and feathers is forbidden.

In other infectious diseases of animals, the preparation and shipment of raw materials from the quarantined point is permitted, in cases mentioned by the instructions, with the permission in each individual case of the veterinary-sanitation service, after the requisite veterinary-sanitation processing.

(11) After removal of the quarantine restrictions, the quarantined raw animal materials which are in the affected point must undergo disinfection in the established order in accordance with the effective instructions and indications on this matter; in this, the shipment of such raw material is permitted only with the approval of the chief veterinary physician of the rayon (city) and with the endorsement of the higher veterinary organs.

(12) Raw animal material which has come in contact with infected raw materials or which is in contact with animals with infectious diseases are subject to the same limitations and must undergo the same veterinary measures as infected raw material.

(13) The persons responsible for the preparation of the products, prior to shipping such products, must submit itinerary lists of agents to the chief veterinary physician of the rayon (city) for permission to prepare raw animal materials in points which are satisfactory in the veterinary-sanitation sense. The itinerary lists with the visa of the chief veterinary physician must be submitted to the agricultural council in the population points in which the preparation of raw materials is to be performed. The itinerary list should be kept in the preparing organizations along with the veterinary testimonials.

(14) The preparers of raw materials, the agents, and the workers must work in appropriate special clothing.

(15) For the transporting of raw animal materials (as indicated in paragraph 2 of the present instructions), the administration of the enterprise must provide special transportation methods (vehicles, trucks, automatic machines, etc.) with containers which are watertight. These vehicles, after every movement of raw animal materials, must be cleaned and disinfected. During transportation, the raw materials must be carefully covered with tarpaulins or with oil-cloth. These vehicles may not be used for other purposes. The vehicles must be loaded with only one type of raw animal material (raw hides should be loaded separately from

bones, wool should be loaded separately from skins). Dietary products and forage are categorically forbidden to be transported with raw products.

(16) During the transportation of raw materials, the vehicle must not be allowed to stand in areas where animals are gathered, nor near water sources or animal runs.

Note. For the transportation of raw materials over regular roads to far distances, a definite itinerary should be worked out and places for stopping should be determined as agreed upon by the veterinary service.

(17) All raw materials depending on the type, are shipped from the sites of preparation for transportation in appropriate packing, as follows:

(a) Raw skins and hides should be in the wet-salted or dry state and bound in bundles with twine;

(b) Wool, hair, and bristles are packed in heavy cloth;

(c) Salted gut is packed in tubs or boxes, while dry gut is packed in bundles;

(d) Horns, hoofs, and bones, which are cleansed of the soft tissues and dried, are shipped in bulk.

(18) Each lot of raw animal material which is shipped by railway or by water transport, as well as by overland routes (beyond the limits of a given rayon), must carry a veterinary testimonial according to the form established by the Ministry of Agriculture USSR.

The transportation of raw hides and wool within a rayon is carried out in accordance with veterinary certification.

(19) Veterinary certificates must accompany each lot of raw animal material and must be presented to the veterinary personnel on route by railway, waterway, or overland route for appropriate control. Veterinary certificates for railway and water transportation must be considered as documents of strict importance, and must be turned over simultaneously with the bills of lading and the specifications into the hands of the receiver of the shipment.

(20) The shipment of raw animal materials by railway and waterway is carried out with the observance of the appropriate rules of the Ministry of Agriculture USSR, the Ministry of Communications USSR, and the Ministry of the River Fleet USSR.

(21) At each enterprise for the storage and processing of raw animal materials, the administration of the enterprise must keep appropriate books (journals) of account regarding the movements of raw animal materials, while the veterinary personnel must keep books (journals) of account of veterinary activities.

Industrial enterprises for the processing of raw animal materials must keep a single itinerary book (bound and witnessed by the local veterinary supervisor) with obligatory inclusion in it of the following information: time of arrival of each shipment of raw animal material;

types of raw material; amount; locality from which the raw material was sent (point, station of shipment, oblast); number and date of veterinary certificate, and specifications issued on the raw animal material being shipped.

This book must be kept by the veterinary personnel of the enterprise, and if there is no constant veterinary worker present, it must be kept by the administration of the enterprise under the control of a specialist of the veterinary network which services the plant.

In addition, each plant must keep a sanitation book for recording deficiencies and suggestions for their rectification, as well as a journal for a description of the veterinary processing of raw material (including that which is isolated).

The construction and maintenance of enterprises of the storage and processing of raw animal materials

(22) The choice of site for the construction of a plant or building for the storage and processing of raw animal materials, depending on the type of production and on the dangers associated with it, is made by a commission which includes representatives of veterinary, sanitation, and technical services.

(23) It is forbidden to erect buildings for the storage and processing of raw animal materials along the banks of rivers, canals, and other water sources, or near animal husbandry farms and sites for the pasturing and watering of cattle. In constructing such buildings, one should be guided by the sanitation norms for the planning of industrial enterprises.

In constructing warehouses and plants for the processing of raw animal materials, areas should be chosen which are dry, nonstagnant, and which are not flooded by spring floods, and with contours which will permit the construction of sewers for surface waters and the removal of waste waters. Surface and waste waters removed from the territory of the enterprise must first be cleansed and disinfected. The construction of well pumps is not permitted.

(24) The area selected for the construction of the plant with all of the surrounding buildings should be completely enclosed by a solid enclosure not less than 2 meters in height.

(25) The method of removal of waste and sewage waters is determined by a commission composed of sanitation, veterinary-sanitation, and technical personnel. Sewage waters must be subjected to constant disinfection in accordance with the instructions of the Ministry of Health USSR and the Ministry of Agriculture USSR.

(26) In places where raw animal products are stored, the primary processing of this material (sorting, washing, removal of admixtures, etc.) is categorically forbidden.

For these operations, special easily isolated quarters must be provided.

(27) Rooms of plants for the processing and storage of raw animal materials should satisfy the following veterinary-sanitation requirements:

(a) In the plants there should be: disinfection chambers for the decontamination of raw materials, bundles, and special clothing, and also individual rooms for the storage of raw material of slaughterhouse origin, raw materials of nonslaughterhouse origin, but which has already been investigated, and raw materials which are awaiting investigation; moreover, an isolating unit with two divisions -- the first for the storage of materials prior to the clarification of the results of the studies in cases of suspicion of anthrax, and the second for raw materials which have given positive reactions in studies or which have been in contact with materials contaminated with anthrax;

(b) Walls and ceilings should be smooth, without clefts, accessible for cleaning, washing, and disinfection by the wet method;

(c) Floors and sewage troughs in the plant buildings should be impermeable to water, and should incline sufficiently to allow the run-off of liquid wastes. For contaminated waters and wash water, tightly closed and cemented receptacles should be provided as well as settling tanks, which must be constructed in such a way that they can easily be cleaned of the precipitates which have settled out.

Precipitates from waste matter in settling tanks should be burned as it accumulates or should be buried in animal graves at a depth of 2 meters.

(28) All production quarters and the adjacent territory, as well as equipment and inventory in the plants for the storage and processing of raw animal material is subject to prophylactic disinfection not less frequently than twice a year. In cases of necessity, upon the detection of infected raw materials, immediate disinfection should be carried out in all infected quarters, equipment, bundles which are lying under bundles of infected raw material, cord and twine, transport vehicles, and so forth.

(29) Infected raw material must undergo disinfection under the observation of the veterinary supervisor, and if disinfection is impossible, it must be destroyed by order of the veterinary personnel.

(30) The order and methods of disinfection of quarters, bundles, transport vehicles, and also of the raw material itself are defined by the effective instructions and indications of the Chief Administration of Veterinary Medicine of the Ministry of Agriculture USSR.

(31) Workers should be provided with separate quarters -- dressing rooms of the type of an admission passage with showers, and with individual closets for clean clothing and special clothing, with wash stands in them, as well as soap and towels.

(32) Industrial enterprises for the storage and processing of raw animal materials must be supplied with a sufficient quantity of water and the necessary devices for the washing of floors and walls.

(33) Discards and byproducts of production (skins, wool, tails, etc.) are collected in a closed watertight container and are sent for utilization.

(34) For the removal of waste products, special vehicles must be provided with sides and bottoms which are impermeable to water or which are fitted out with watertight containers with close-fitting tops.

All transport vehicles, boxes, and containers must be kept clean and must be carefully washed and disinfected after the disposal of the waste material.

(35) All waste products which cannot be utilized are burned on the site in the specially adapted furnaces, and in the absence of these are buried in animal graves at a depth of 2 meters.

(36) The drying of raw animal materials, when required for the purposes of the production, should be carried out in rooms which are especially designated for this purpose.

(37) On the territory of the enterprise there should be a laundry for the washing of the special clothing of the workers of the plant.

(38) The land on which the industrial enterprises for the processing of raw animal materials are located should be kept in the necessary state of cleanliness and order and should have an approximately smooth surface. All roadways and pathways to the plant should be covered with asphalt or should be paved.

(39) It is not permissible to store forage or to keep animals on this land.

(40) The industrial enterprises which do not satisfy these requirements should be remodeled in accordance with these requirements. Enterprises which have not been remodeled within the time indicated by the supervisory organs will be closed by order of the local executive committee.

(41) Raw animal materials arriving at enterprises should not be placed in the general storage quarters, nor should they be sent for processing, through the production lines, etc., without special veterinary-sanitation examination and without special permission in each individual case of the veterinary-sanitation personnel servicing a given plant; a record of this should be kept in the sanitation book of the plant.

(42) Workers of plants for the storage and processing of raw animal materials should be provided with special clothing in accordance with existing norms, and, for disinfection work, should have protective masks, goggles, rubber gloves, etc. The protective equipment and special clothing should not be taken beyond the limits of the plant without preliminary disinfection. Disinfection of special clothing and protective equipment of workers should be performed not less than once every 10 days, and the special clothing of agents should be disinfected immediately upon returning from their work.

(43) In the plants (in shops) there should be mats which are soaked with disinfection substances for the wiping of shoes and boots upon leaving the shop and the plant, and there should be devices for the mechanical cleansing of shoes and boots and removal of dirt from them.

(44) The opening, content, and internal construction of storehouses for the temporary storage of raw animal materials are regulated by rules or by obligatory laws published by the local executive committees upon representation of the chief veterinary physician of the rayon (city).

(45) In the quarters of the enterprise for the processing of raw animal materials, the precautionary rules in working with these raw animal products should be posted in a conspicuous place, and should be approved by the local organs of the veterinary-sanitation supervision and the health organs.

(46) Responsibility for the veterinary-sanitation state of the enterprises for the storing and processing of raw animal materials and the fulfillment of the present instructions must be borne by the director of the plant. Veterinary personnel servicing the plant are responsible for the completeness of the veterinary-sanitation supervision and for veterinary-sanitation measures which are carried out at the plant.

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With the publication of the present instructions, the following are considered replaced:

(1) The Rules of the Narkomzem USSR "On Veterinary-Sanitation Supervision and Veterinary-Sanitation Measures in Preparing, Storing, and Processing Raw Animal Materials, and in Constructing and Maintaining Enterprises for the Storage and Processing of Raw Animal Materials," of 7 October 1938.

(2) The Instructions of the Chief Veterinary Administration of the Narkomzem USSR and the All-Union Sanitation Inspection of the Narkomzdrav USSR of 16 June 1938, No. 177/21.

(3) The Circular Letter of the Chief Administration of Animal Husbandry and Veterinary Medicine of the Ministry of Agriculture USSR of 12 January 1955, No. 167-I "On the Veterinary-Sanitation Servicing and Veterinary-Sanitation Supervision in Plants and Institutions for the Preparation, Storage, and Processing of Raw Animal Materials."

VETERINARY-SANITARY RULES FOR THE UTILIZATION, COLLECTION, AND DESTRUCTION OF DEAD ANIMALS AND BYPRODUCTS GATHERED IN THE HANDLING OF RAW ANIMAL PRODUCTS

Approved by the Ministry of Agriculture USSR on 6 April 1951, and accepted by the All-Union State Sanitation Inspection on 14 March 1951 to replace the Rules of the Narkomzem USSR of 7 February 1940

(Excerpts)

General Positions

(1) All carcasses of animals, slaughterhouse confiscates, wastes and discards, which are obtained upon processing raw animal materials, are taken to the utilization plants, to biothermal pits, to animal graves, or are subjected to immediate destruction by burning.

(2) The transportation of the carcasses of animals, slaughterhouse confiscates, wastes and discards obtained during the processing of raw animal materials is accomplished in specially assigned and equipped vehicles with bottoms and sides which are impermeable to liquids, which are reinforced with metal, and with observance of the veterinary-sanitation rules as indicated by the veterinary-sanitation supervisor.

(3) Prior to the collection of carcasses, the owner of the animals must take measures to prevent other domestic animals, birds, and, in the summer time, insects from reaching the carcasses.

(4) The site where the carcass lay or where any part of it lay, as well as the inventory, sanitary special clothing, and transport vehicle used in the collection and transportation of carcasses of animals, slaughterhouse confiscates, discards and wastes obtained in the processing of raw animal materials are subject to immediate disinfection. Disinfection is carried out in accordance with the instructions of the veterinary-sanitation supervisor.

(5) Persons concerned with the transportation and collection of carcasses of animals, slaughterhouse confiscates, wastes and discards obtained in the processing of raw animal products must fulfill the orders of the veterinary physician concerning measures of personal cleanliness.

The Utilization of Carcasses of Animals in Utilization Plants

(6) The selection of a site for utilization plant is accomplished by a special commission with the obligatory participation of the veterinary and sanitation supervisor and is approved by decision of the rayon (city) executive committee.

(7) The construction of the utilization plant is carried out in accordance with the "Sanitary Norms for the Planning of Industrial

Enterprises" -- NSP -- 101-51 with regard to projects agreed upon with the veterinary and sanitation supervisor.

(8) The territory of the utilization plant should be surrounded by a solid enclosure with a height of not less than 2 meters, and should be either paved or covered with asphalt and should have sewage channels running to a reservoir for the collection of waste waters.

It is forbidden to build living quarters, quarters for animals, warehouses for products, articles of trade, or forage in the territory of the utilization plant.

(11) All production quarters should be provided with ventilation with strong suction, and all kettles and boilers should be covered with special hoods with exhaust fans in accordance with established norms.

(12) The utilization plant should be provided with an adequate quantity of cold and hot water.

A special hot water heater should be provided for heating water.

(13) Waste production waters of the utilization plant are discarded only after disinfection on the site of the utilization plant.

For disinfection of waste waters, autoclaves or chlorinators with settling tanks, in accordance with typical plans, should be provided.

Waters which have been permitted to settle in settling tanks are sent through the chlorinators, and the precipitates are mixed with dry chlorinated lime containing not less than 25% active chlorine, following which they are buried in the earth in special localities as ordered by the veterinary-sanitation supervisor.

Note. In the case of spore-bearing microflora, the mixture should be added in the ratio of 1 part of lime to 3 parts of precipitate, while with nonspore-bearing microflora, the ratio is 1 part of lime to 10 parts of precipitate.

The site of discharge of waste waters is agreed upon with the sanitation supervisor of the plant.

On the territory of small utilization plants, in the absence of sewage gutters, watertight cesspools are provided the contents of which, following disinfection with chlorinated lime, are carried away to sites determined by the veterinary and sanitation supervisor.

(14) Persons engaged in work on the utilization of carcasses are equipped with sanitary and special clothing in accordance with effective norms. Leaving the territory of the utilization plant in this sanitary special clothing is categorically prohibited.

(15) Transportation of carcasses to utilization plants is accomplished, in each individual case, only with permission of the veterinary worker and must be accompanied by a document in which the cause of death of the animal is indicated.

(17) Carcasses of animals upon arrival at utilization plants must undergo special studies for anthrax and other diseases caused by spore-forming microbes, and may be autopsied to exclude these.

(19) The utilization of carcasses must be accomplished no longer than 2 days after their arrival at the utilization plant. The carcasses of animals dying of infectious diseases must be utilized immediately.

(21) The carcasses of animals dying of glanders, anthrax, black quarter, epizootic lymphangitis, malignant edema, equine infectious anemia, bradzot of sheep, rabies, cattle plague, fowl plague, and other infectious diseases, in which cases, according to existing instructions, the carcasses of animals must be destroyed along with their hides and fur, may be received for utilization in specially equipped utilization plants, with the use of autoclaves which can contain entire carcasses along with their hides under pressures of not less than 4 atm and for a period of not less than 4 hours. In case the carcasses cannot be utilized by the above-mentioned method, the carcass together with its skin must be burned.

(23) Hides removed from the carcasses of animals at the utilization plant must be disinfected in accordance with the orders and instructions approved by the Ministry of Agriculture USSR, and must be stored in special quarters for raw hides.

The Collection and Destruction of Carcasses

(24) The carcasses of animals and birds, depending on the character of the disease, in the event that they cannot be utilized, must be destroyed by burning, by burial in animal graves, or by destruction in biothermal pits; the carcasses of animals dying of anthrax must be burned.

(25) Animal graves and biothermal pits must be situated in localities with a low level of ground waters (not less than 2.5 meters from the surface of the soil at their very highest point), and no closer than 0.5 kilometer from population points, and far from pastures, watering sources, wells, highways, and cattle runs.

The equipping of biothermal pits is accomplished in accordance with representative plans.

(26) The choice of an area for biothermal pits and animal graves is made by a special commission, which is to include representatives of the organs of local government, and the veterinary and sanitation supervisor.

(27) Animal graves and biothermal pits should be surrounded by a wall, with the outer side of the wall surrounded by a ditch. In the absence of wood, the wall is made of earth, and the ditch should have a depth of 1.4 meters and a width of not less than 1 meter. Entrance to the animal graves must be provided with gates, and the biothermal pits must be covered with covers which are locked.

(28) Burial of carcasses in animal graves must be at a depth of not less than 2 meters and must be covered with earth of not less than 0.5 meter, and the soil on which the carcass was lying must be thrown into the pit together with the carcass. Graves which have settled below the level of the surrounding earth should be refilled.

(29) Within the territory of the animal graves and biothermal pits, it is forbidden to pasture cattle, to grow grain, to remove soil beyond the limits of the animal grave (biothermal pits).

(30) All active and newly opened animal graves and biothermal pits must be listed with the chief veterinary physician of the rayon (city) agriculture department and the veterinary departments and veterinary-sanitation index cards must be kept on them.

The use of the territory of animal graves for other purposes after their closure is forbidden.

(32) Responsibility for the construction, sanitary condition, and equipping of animal graves or biothermal pits, in accordance with the present Rules, rests with the directors of the establishments, enterprises, and organs which manage the animal graves or biothermal pits.

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